

VOL. XIV. NO. 7

1917

PRICE 25 CENTS

THE CORNELL COUNTRYMAN



AFFAIRS OF THE COLLEGE

By A. R. MANN

OUR CHURCH

By A. B. GENUNG

UNCLE SAM, STOCKMAN

By A. D. MELVIN

SPECIAL CROP SOILS

By E. O. FIPPIN

WHO CARES FOR THE YARD?

By E. A. PIESTER

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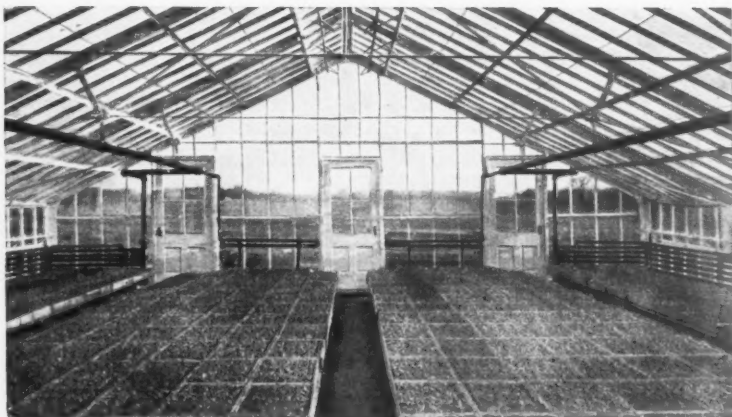
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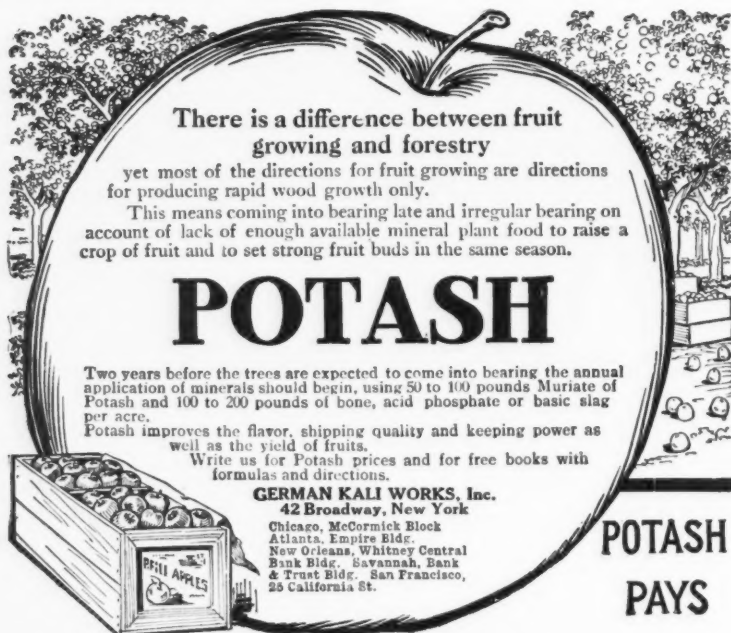
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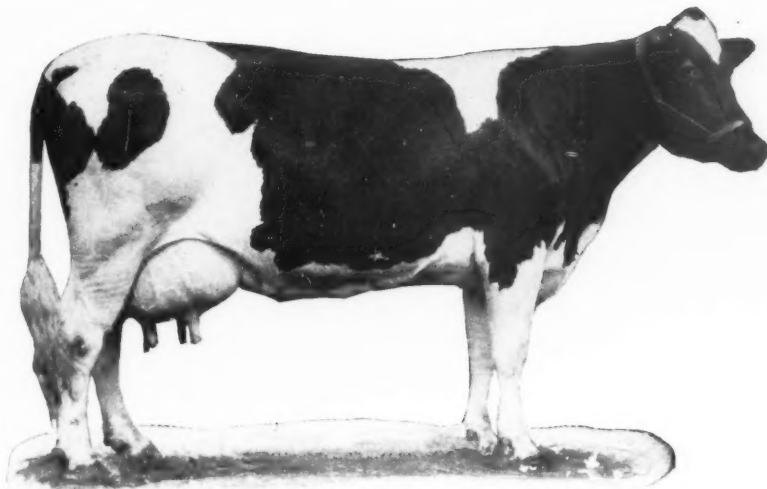
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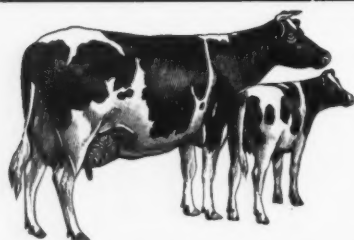
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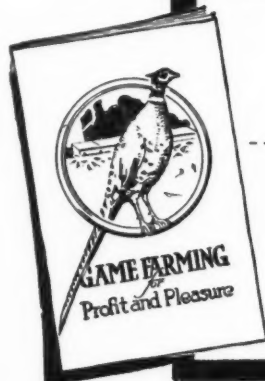
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TABLE of CONTENTS

APRIL
1917

Contents and Cover Cut	- - - Photographs by A. A. Allen	
Frontispiece—April's Promise	- - - W. P. Alexander	546
Who Cares for the Yaid?	- - - E. A. Piester	547
The Affairs of the College	- - - A. R. Mann	550
Washington at Work—VII. Uncle Sam, Stockman	A. D. Melvin	552
Our Church	- - - A. B. Genung	557
Foliage, Wood and Wire Fences	- - Harold N. Humphrey	561
Fertilizer from the Air	- - - E. J. Pranke	563
Agricultural Mobilization	- - -	565
The Length of the Laying Period as an Indication of the Laying Capacity of Fowls—		
Part II. A Practical Program of Selection	- J. E. Rice	566
Soils and Agricultural Development of New York		
X. Special Crop Soils	- - - E. O. Fippen	568
II. Mediaeval Women as Wage Earning Farm Hands		
	Blanche Evans Hazard	572
Editorials	- - -	574
Campus Notes	- - -	577
Former Student Notes	- - -	581



APRIL'S PROMISE

William Prindle Alexander, '17

There's something stirring in the
world, that makes the heart sur-
mise—

A golden intimation you must know—
That promises a morning full of
subtle, sweet surprise

When you'll wake to find the smile of
spring reflected in the skies
And weary winter of the long ago.

With emerald feet and delicate breath
the Spring will come again,
And the sod will yield its old familiar
tang,

And you shall see the marigold
a-revel in the rain

Of April, and a thousand things start
into life amain.

And the black-bird comes with loud
and merry clang.

You may sense the vernal advent in a hundred hinting ways,
In the bud the magic working you may see,
The noon-tide rill a-trickle on the hill, the sign betrays
The homely sparrow in the street a newer dress displays,
And the cattle low from pastures wide and free.

Oh! the robin and the blue-bird and the long field furrowed o'er,
And the woodland with its ever changing charm,
Oh! the elm tree and the maple and the mottled sycamore—
All, with song and bud and blossom, will a wonderland restore
Where spring is best and brightest, on the farm!

THE CORNELL COUNTRYMAN

Vol. XIV

ITHACA, N. Y., APRIL, 1917

No. 7

Who Cares for the Yard?

An Arbor Day Article

BY EVERETT A. PIESTER, '15, Landscape Architect

AT THIS TIME of the year hundreds and thousands, in fact almost all home owners and tenants are beginning to feel the influence of the spring weather and are being moved with the desire to, "get out of doors and plant something." In far too many cases this is never done because they begin to ask the questions, "What shall I plant? Where shall I put this and how shall it be planted?" It is not possible to fully answer these questions in a few pages but my object is rather to encourage the reader to make further research and to try some effects in his or her own yard.

I shall take it for granted that every farmer is in the business "to make money" and further than that, "in order to provide an attractive and pleasant home for himself and his family." How many realize that, in carrying out these two main objects of life, it is worth while to have a neat dooryard?

In a recent editorial *The Countryman* effectively used the popular phrase "It Pays to Advertise." Everywhere along our country roads merchants, manufacturers, hotels and others have erected elaborate and richly colored signs because they believe the traveler in the country will see and notice unusual things. Contrast, if you will, your thoughts when you pass an unkempt, unsightly farmyard and those when you see a place with well painted buildings,

well clipped open lawn and with trees and other planting about it. On which place would you rather live with your family? Which contributes the more to the "Back to the Farm Movement?" For which would you pay the greater price or levy the higher valuation? Which farmer probably gets the better prices and handles the better class of trade? Neatness in the home grounds is the farmer's best advertisement, the best bid for his boy to "stay-on-the-farm" and the source of greatest satisfaction to himself and pride to his housewife, who gets her recreation there, looks out over it a thousand times a day, receives her summer guests, teaches the children to romp and play there and gets her own inspiration of life.

"We are going to have an Arbor Day out at our place," said little Joe Ellis, "some Saturday just as soon as the frost is well out." Surely others will do the same. Find out why your road has not been getting its share of attention and have it graded. Take down the fence in front of the house and leave a good, deep, open lawn, or, if you still insist on having the fence be sure it is carefully repaired. Go over the lawn and rake out dead grass and refuse. (It is well to cover the lawn in winter, or very early spring, with well rotted stable manure, wood ashes and bone meal, or compost, so as to supply fertilizer or plant food to the grass.) If there are any thin

places rake them up and sow seed, covering with the back of the rake and adding well rotted manure to give it a start, but rake it off ten days after the grass is started.

There are a few suggestions that will

for, but if you can have a small space at the side of the house, or in the backyard, that is overlooked from living-room windows, save it for flowers alone. They always look better in their own garden plot than as spots in the center of the lawn.



Expensive and Unattractive

apply in most cases with regard to planting or arrangement of home grounds. Do not attempt to get a pleasing effect by planting a variety of single specimen shrubs and plants in the front yard. This will only take up the space, make it look smaller and cluttered, without giving any interesting picture or effect. The object should rather be to make a picture with the house the main feature of it.

Porches will be more comfortable and present a more inviting and interesting appearance if they have vines on them. Use some hardy ones that do not have to be replanted every year, such as *Wisteria* or *Clematis*.

Few foundation walls are interesting but they will be better if partially hidden by hardy shrubs or evergreens. Such planting will also help to frame in the house and be a tie uniting it with the lawn.

Do not attempt more than can be cared

for. Have regular beds in this garden and permanent walks of grass or gravel in between. Hardy perennial plants that come up year after year are quite as pretty as annuals and do not have to be sown and nursed every spring.

Trees are doubly useful. They not only help to frame in the views and to give a setting for the house but they also protect and shelter the house and buildings from cold piercing winds; and cool them in summer by shielding from the hot sun. Always plant good standard trees for permanent results rather than weak, short lived ones.

Use shrubs, such as lilacs, *spirea* and *honeysuckles* to screen undesirable views or buildings.

If you have an elaborate, modern country home, like the one illustrated, it will be worth while to secure advice and service of a professional landscape architect. However, if you have a modest home do not overlook the opportunity of



Inexpensive and Attractive

such an attractive place as the little cottage shown on this page, which the housewife has accomplished with an open, well clipped lawn and a very little planting in addition to the wonderful elms. Every New York farmer should have a copy of the free bulletin of the Cornell College of Agriculture *Home Grounds* which is a complete text for information and for reference on the arrangement of the grounds and also on plants to use.

There are many ways of getting information about home planting. Have your county agent get lectures and in-

formation; write your State College; read some of the magazines such as "House & Garden" and refer to books if you want to go deeply into the subject. "Kirkgard" Trees, Shrubs and Perennials is a descriptive list for planting; "Kemp" Landscape Gardening, a treatise on the arrangement or design and "Thomas" Roses and Rose Culture, is of value to the lover of roses. A great deal of good information may be had from booklets and catalogs of old and reputable seed and nursery concerns. But be careful about taking "everybody's" suggestions for your grounds.

AGE

The old man stops by the road—
And leans on his scythe awhile
"First harvest I ever missed," he says
—And he tries to smile.

He tries to smile, but his eyes
Are lost in the years to be
And mirrored plain in their hopeless
stare
Are the things they see:—

An old man sits by the fire
At the end of another day,
And women scold as they move about
—He is in the way.

The fire dies down to dust
And light is no longer there
Alone at the hearth the old man sits
In his lonely chair.

The Affairs of the College

A Statement to the Alumni. Delivered before the Eighth Annual Meeting
of the Alumni Association of the New York State College of
Agriculture at Cornell University

BY A. R. MANN, Acting Dean

"I KNOW that you want especially a statement concerning the affairs of the College. I shall, therefore, go directly to the point.

"In the main the work of the College is proceeding well, and satisfactory progress is being made. The spirit of good-will and of desire for accomplishment seems to prevail among students and faculty alike. The financial handicap imposed by the failure of the State last year to make adequate appropriations for the maintenance of the College has worked severe hardship, but all of the members of the staff are doing their best to meet the situation.

"The enrollment of students is somewhat less this year than last. An inquiry made by Dean Russell of the Wisconsin College of Agriculture reveals the fact that this decline has been very general among the colleges of agriculture; and it seems to be evident in other colleges as well. Two reasons for the decline seem to stand out above others, namely, that there has been a very general falling off in the enrollment of boys from the cities in the colleges of agriculture, and, second, that the labor situation throughout the country has had its effect. No doubt the high wages now being paid have kept from the college an appreciable number of young men who otherwise would have entered last fall. The fact that it has been so exceedingly difficult to get any farm labor has very probably made it necessary for many farm boys to stay home this year. This set-back is not likely to be corrected as long as the present conditions in the country exist.

"Our enrollment this year is affected further by the fact that we were forced to omit the winter course in home economics because of insufficient staff to carry the work in the Department of Home Economics. We very greatly regretted not being able to carry the course, as it is the only short course of instruction on the problems of farm women offered in the State and it has been carried with splendid success since its establishment in 1906. It was not a pleasant task to decline the large number of applications received.

"There have been many changes among the younger men on the staff owing to the failure to secure promotions last year. With the reduced appropriations made by the State it was impossible to give increases in salaries. It has become a very serious problem to hold our staff together in the face of attractive offers which are constantly coming to the men from other institutions and from commercial concerns. The situation is peculiarly acute this year both because of the form in which appropriations for this College are now made, the salaries being fixed by statute, and the almost unprecedented cost of living. Within the year nine of our professors have been asked to go elsewhere at increases of \$500 per year; one was offered a position elsewhere at an increase of \$750; four were offered increases of \$800 each; one an increase of \$900; three were offered increases of \$1,000 each over present salaries; one was offered an increase of \$1,250; one an increase of \$2,000. It cannot reasonably be expected that men will continue to refuse such offers

indefinitely, and the State of New York is very likely to lose some of the best men from the faculty of its College of Agriculture unless adequate maintenance, including salary increases, is provided.

"The handicaps have been felt most severely in the extension work in view of the fact that the amounts available for extension have not increased during the last few years, but on the contrary have decreased. The Legislature of 1913 appropriated \$72,000 for extension work, whereas the amount available this year is \$52,000. [Here the Acting Dean enumerated the most serious curtailments to the extension work resulting from the reduced funds.]

"While the situation which confronts us gives cause for serious concern, as the demands for service from the farmers of the State are rapidly mounting, we are not pessimistic. I recognize that the making of appropriations for the large number of state institutions is a very difficult matter, particularly when all of them are feeling need for development. There is reason to think that the State will make more generous appropriations for the College this year so that we shall get relief and be able to meet some of the most urgent demands. I am presenting these facts in no spirit of criticism or discouragement, but because I think you want to know the actual situation.

"The former students of the College are always interested in the growth of the institution and I am able to report a little expansion in the way of additional facilities. The headquarters building of the animal husbandry department is now being connected with the central heating plant; plans have been completed for an addition to the main stock-judging pavilion to provide for the judging of small animals; plans have also been approved for a small addition to the forestry building to house the sawmill machinery and equipment; and the contract has been let for the erection of a palm and decorative plant house in connection with our greenhouse range.

"The present Legislature is being asked to make provision for an additional unit at the central heating plant; for remodeling the old boiler room in Roberts Hall; to provide a cold storage plant, a piggery, a packing shed for the pomology grounds, a small greenhouse for the Department of Pomology, storage facilities for the Department of Plant Breeding, a service building at the vegetable gardens, an apiary, an insectary, and an appropriation for a fish culture experiment station. These are all small items and the total amount for the new construction involved is not large. They represent additional facilities which the College has long stood in need of. They are essential to the proper conduct of the work.

"I would not have you think that we are mostly concerned with our handicaps just now. There are many causes for gratification in the work and many of the most important things do not appear on the surface, but are represented in the efforts of staff and student body who are quietly and earnestly at work. Some of these more encouraging aspects of the work I shall have opportunity to mention at your later session.

"I am glad of the opportunity to lay these important matters before you because of your interest in the most intimate problems with which the College has to do. It is a great asset to any institution to have an interested and loyal group of alumni and former students, and in this respect the College has been peculiarly fortunate. The active and intelligent criticism and support of the former students is most welcome and is always helpful."

Washington at Work

A series of articles furnished exclusively to the Association of Agricultural College Magazines. Bureau Chiefs of the United States Department of Agriculture describe from the inside their work for the farmer.

VII. UNCLE SAM, STOCKMAN

BY A. D. MELVIN

Chief, Bureau of Animal Industry

THE Bureau of Animal Industry endeavors to foster and improve the live-stock industry and also to aid the consumer in procuring a wholesome supply of meat and dairy products. This work includes animal husbandry, dairying, the meat inspection, and the study, prevention, and eradication of animal diseases. The first two subjects offer careers to agricultural college graduates who have specialized in those subjects, while the other work is conducted mostly by veterinarians, who must be graduates of approved colleges.

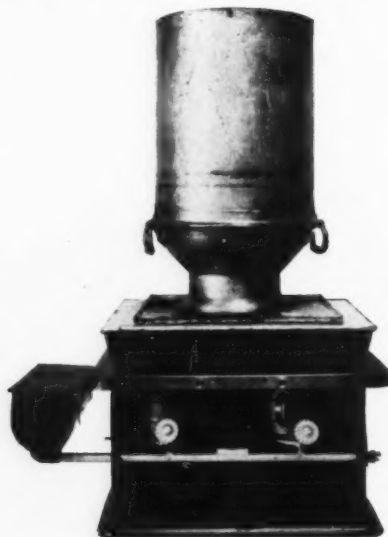
The work in animal husbandry, which includes investigational and educational work in the breeding, feeding, and management of horses, beef cattle, sheep, goats, swine, and poultry, engages the services of 67 animal husbandmen of different grades. The experiments deal mainly with such broad problems as

the suitability of types of animals to large general areas and the conditions affecting prolificacy and growth in farm animals, rather than with questions of a purely local or temporary character. In some instances the work is done in co-operation with State experiment stations. For other projects the Bureau has its own farms. One of these is at Beltsville, Maryland, 13 miles from Washington,

where 200 acres are devoted to experiments with horses, swine, sheep, milch goats, and poultry. The Morgan Horse Farm, at Middlebury, Vermont, is used for horse and sheep work, and an area of 29,000 acres in Fremont county, Idaho, has recently been procured for use as a sheep experiment station.

HORSES

At the Morgan Horse Farm horses of Morgan descent are bred, having in view the requirements of the market and of New England farms.



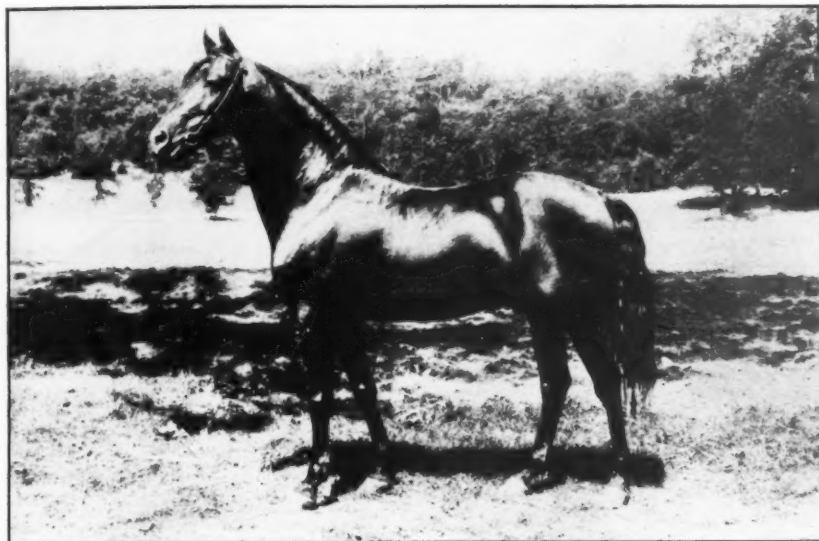
SIMPLE FARM STERILIZER

The Government uses it on its dairy farm and says it does the work

The stock includes 41 mares, 5 mature stallions, and 11 young stallions, and 11 young stallions. The breeding of horses suitable for military purposes is carried on in lo-

BEEF CATTLE

Studies of the cost of maintaining breeding stock and of raising stock to various ages, and of methods of wintering and fattening stockers, are being con-



GENERAL GATES

Morgan Stallion Owned by Government Farm at Middlebury, Vermont

calities where such horses are the most profitable type for farm use, and this, in general, promotes better horse breeding among farmers. In 1916, 5 Government stallions stood for service in New England, 19 in Virginia and adjoining States, and 12 in Kentucky. The War Department is given an option to purchase the foals, and no service fee is charged the owner except when he wishes to be released from the option.

Experiments with the object of producing a breed of horses suitable for carriage and general purposes are carried on in coöperation with the Colorado Experiment Station at Fort Collins. The stud includes 10 stallions and 41 mares over 2 years of age, and 31 yearlings and foals. Experiments in feeding farm work horses and mules are conducted at the Beltsville, Maryland, farm.

ducted on a coöperative basis on 6 farms in Mississippi, North Carolina and West Virginia. In coöperation with the Kansas Experiment Station the inheritance of milking and fleshing qualities of Shorthorn cattle are being studied with a view to establishing within the Shorthorn breed a type representing a combination of heavy fleshing qualities with a profitable degree of milk production. Twenty registered Shorthorn cows are being used in this project.

Investigations are made concerning the loss in weight of live stock in transit and to improve conditions of shipment. Beef cattle extension work is carried on mainly in areas that have been freed from the fever ticks. Associations of beet producers are organized, and "baby beef" clubs are formed among boys. Information is furnished and demonstra-

tions are conducted in localities where necessary.

SHEEP AND GOATS

For the past 10 years investigations in flock management and breeding problems have been in progress in Wyoming, with the object of producing a range type of sheep from stock of Rambouillet blood and studying the adaptability of Corriedale sheep to western range conditions. Nine hundred ewes are now on hand, and this number will be increased after the work is transferred to the new location in Idaho.

Farm sheep investigations, including the study of factors controlling yields and rate of growth of lambs and the determination of the lines upon which sheep raising can be made most profitable under the main types of agricultural conditions, are conducted with 2 flocks of registered Southdowns, one at the farm in Maryland, the other on the Morgan Horse Farm in Vermont.

Efforts are being made to improve the methods of preparing and handling wool for market so that the wool grower may receive better returns. A special wool laboratory, including facilities for scouring, microscopic examination, etc., is under construction.

Milch goat investigations are being carried on to determine the most economical methods of breeding, feeding, and management for the production of milk for infants and invalids and for commercial cheese making. A dairy of 20 milking does is maintained, and through coöperative arrangements with New York hospitals clinical data are being obtained as to the value of goat's milk for infants and tuberculous patients.

SWINE

Investigations in pork production include studying the effect of feeds on the growth and quality of hogs and the keeping quality of pork, the toxic effect of cottonseed-meal feeding, and methods of curing farm pork. This work is carried on at the farm near Washington, where a herd of 100 hogs is kept. A specially constructed and arranged abattoir at the farm gives facilities for scientific study of the effects of feeds upon the carcass and for working out methods of curing on farms and in local packing plants.

The formation of boys' and girls' pig clubs is being directed and encouraged. Farm children are taught improved methods of raising and fattening hogs and are given an insight into the business side of farm life. This work is being carried on in 13 States, and the clubs have a membership of nearly 25,000.

POULTRY

Studies are made of incubation, breeding, feeding, management, and the inheritance of egg production. Trap-nest records are kept on about 500 hens, representing a number of breeds. The poultry specialists have been especially successful in combining high egg yield with exhibition requirements.

Poultry clubs are organized among boys and girls, the plan and objects being similar to those of the pig clubs. In 6 States in which the work is in progress 41 counties have been organized, and there are nearly 10,000 members. By means of literature, posters, and lectures, the Bureau is endeavoring to bring about improvement in market eggs so as to avoid heavy losses from bag eggs. The principal remedy is the production of infertile eggs.



ONE OF UNCLE SAM'S STOCK FARMS
Government Dairy Experimental Farm near Beltsville, Maryland

Investigations are also carried on with regard to turkeys, guinea fowls, pigeons, and ostriches.

ANIMAL GENETICS

Research work is being carried on to obtain as complete an understanding as possible of the effects of inbreeding, to interpret results of experiments with regard to practical breeding, and to obtain an insight into the factors which determine the course of the life history of animals. Seventeen families of guinea pigs are under study, some of which have been closely inbred for 16 generations. Important relations have been found with respect to sex ratio, birth weight, early growth, and other points which are vitally important in larger animals.

DAIRY WORK

A division of the Bureau is devoted to the dairy industry and carries on three general classes of work—laboratory research, field research, and dairy extension.

The laboratory research includes investigations in the bacteriology of milk; physiology of milk secretion; manufacture and handling of commercial ice cream; changes in butter; milk condensing; utilization of creamery and cheese-factory by-products, such as the manufacture of cottage cheese and casein from buttermilk and skim milk and the manufacture of milk sugar; disposal of dairy and creamery wastes; manufacture and ripening of Swiss cheese; soft-cheese investigations; silage investigations, etc. This work necessitates the employment of physiological chemists, dairy chemists, dairy bacteriologists, and experts in the manufacture of butter, condensed milk, and the various kinds of cheese, including the foreign types.

The field research consists of investigations in cow-testing associations and bull associations (a study of the best methods employed in such organizations); creamery management (study of cost of operation, cost of fuel, the pasteurization of cream for buttermaking, etc.); dairy sanitation (a study of the sanitation of city milk supplies); the cost of milk production on the average

dairy farm; and the cost of handling milk in cities, including the cost of various operations in preparing milk for the market. At the dairy experimental farm at Beltsville, Maryland, experiments are conducted in the feeding, breeding, housing, and care of dairy cattle, and detailed records are kept of all farm operations and observations made on the building up of the soil by fertilization, tillage, and drainage. At State College, Pa., calorimeter experiments are conducted on metabolism of dairy cows, in cooperation with the Institute of Animal Nutrition of the Pennsylvania State College.

The extension work is conducted in cooperation with the extension departments of the State agricultural colleges, much of it on the half-and-half basis of support, and men are thus engaged. These men help farmers in the feeding of dairy cows, the raising of calves, and the construction of silos and dairy buildings; they introduce herd records, give advice in the selection of purebred bulls, etc., and assist in the organization of cow-testing associations and bull associations. They also give assistance in the organization of creameries and cheese factories. Educational work is carried on among dairymen and milk handlers, and an endeavor is made to unify and make more efficient the inspection work carried on by State and municipal boards of health.

Additional men are required from time to time for both research and extension. Men qualified to work on special problems of research are needed in the laboratories, while the extension work requires those trained and experienced in dairy farming, dairy manufacturing, and the handling of market milk.

The Government meat inspection, which is applied at all slaughtering and meat packing establishments engaged in interstate or foreign commerce, forms the largest branch of the Bureau's work. This covers about 60 per cent of the meat produced in the United States. During the fiscal year 1916 the slaughter under Federal inspection amounted to

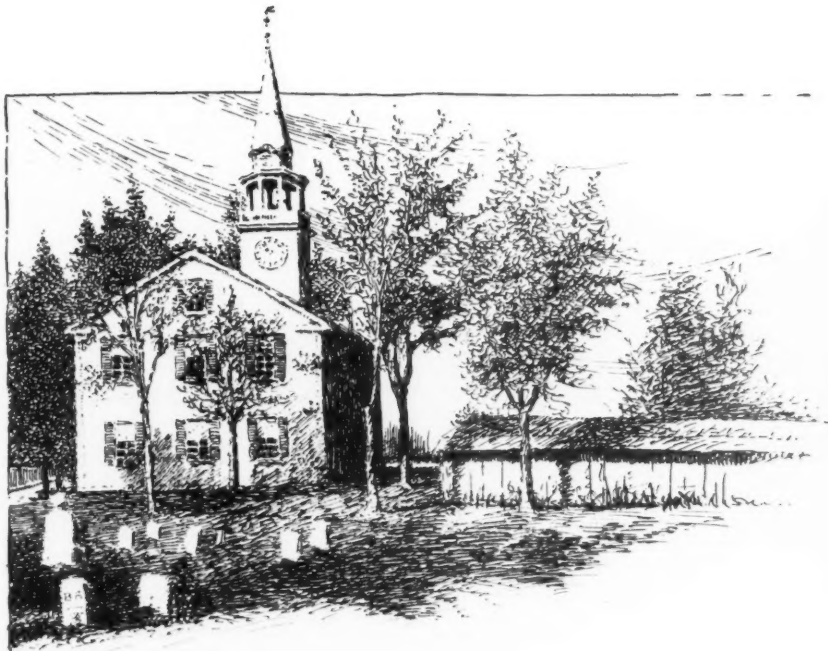
7,404,288 adult cattle, 2,048,022 calves, 11,985,926 sheep, 180,356 goats, and 40,482,799 swine, a total of 62,101,391 animals. The Inspection is carried on at 850 establishments in 235 cities and towns, and engages the services of more than 2,600 employees, of whom nearly 800 are veterinarians.

Animal diseases are studied by a corps of scientists, mostly veterinarians with special training in bacteriology, and information and advice are given to the public as to the nature of such diseases and how to prevent and treat them. Losses from hog cholera have been greatly reduced by the wide use of serum prepared according to the Bureau's method. Tuberculosis and contagious abortion are subjects of special study with a view to furnishing to stock owners information that will enable them to check and eliminate these diseases.

The systematic eradication of certain diseases of live stock is being pushed with good effect. The diseases known as scabies of sheep and cattle, which were prevalent throughout most of the territory west of the Mississippi River fifteen years ago, have been almost stamped out as a result of work in coöperation with State authorities. For the past 10 years the work of exterminating the ticks that spread the so-called Texas fever of cattle has been carried on, and 42 per cent of the previously infested area in the southern part of the United States has been freed of this pest. The latter work is making possible the development of the cattle industry in regions where this was previously impracticable, resulting in considerable increase in the country's supply of meat and dairy products.



The Army Gets First Choice of the Government Stables



Our Church

BY A. B. GENUNG. '13

THE institutions of the open country are all under the microscope. We are finding good points where they were overlooked once; we are weeding out some things that were once thought indispensable. All to the end that we may be better men and live in a better land.

In the little church over the hill from my farm, we had last year an old-fashioned "Revival." I did not belong to the church. I have often seen these revivals, sometimes finding them little more than emotional exhibitions, without lasting result. But this was different. Either some quality of the man in charge, or some responsive element in the people round about brought into being a new something in our community.

It has not been merely an in-

tangible spirit; the evidence stands out concretely over our whole countryside. This community has braced up, within a year, morally and materially. Just for example of what I mean: my neighbor, Ike Roe, has almost forsworn his besetting whiskey sin; he has hired out by the year, and five little Roes are in school, cleaned and well clothed. Of course you don't know Ike Roe; but this country knows him,—and marvels! The Johnson, Henderson, and Harvey barns stand up shining in new paint; Ed. Thompson warms his feet over a hot-air register; the fourth farm furnace in the township; Molley Perkins has acquired what two generations of Perkins women have passively struggled for: a modern bath room. John Hamilton is talking of sending Young John to the agricultural school,—one cannot appreciate

this without knowing the hard-headed Hamiltons. And so it goes: a collection of straws that shows me, at least, that the wind is blowing.

There is a new community spirit abroad, too. Fully fifty men volunteered when we cleaned up the fair grounds last fall: something absolutely unprecedented as to numbers. I think every man in the neighborhood contributed his dollar toward painting the church—many of them dollars that were never before put to similar use. There was not a dissenting vote at school meeting when an extra appropriation of \$500 was proposed for rejuvenating the school-house. Our neighborhood is a better place to live in than it was a couple of years ago. We have—as Ann Morgan says—indeed laid hold of progress by the tail!

I have lived back here in the country quite a while. The thing which has gripped this neighborhood fascinates me. If I am not mistaken, I am watching a spectacle which we, as a people, are spending precious effort and money to promote. To a person who holds any love of country life, it is impressive. In all the back-to-the-land talk, in discussion of the so-called rural "problem," in the queries as to why boys leave the farm, the kernel in the nut is really some such re-directing of the energies of neighborhood and community.

We have been brought up to believe that the way to get at this matter is via the economics of the situation. That is the line on which the government works; that is the direction which the press and politics take. It seems logical, they say, that better social conditions will follow as the result of better methods of farming. We are taught to use better machinery, to test our seed, to be more thorough in tillage. We learn to breed better stock, to market our products intelligently, to organize the farm business. We go zealously about the job of making more money. The state provides us with farm bureaus and agricultural schools; good

roads come our way; we are blessed with free mail service. That idea which gained ground ten years ago that the farmer had perhaps not quite shared in the general prosperity, rather made the country turn over a new leaf in its attitude toward him. All of which is good and goes far toward a better order of rural things.

Of course the business of farming must be a paying one. It is a natural consequence that finer social—and perhaps spiritual—life should flourish on a groundwork of sound economics, just as the best type of men must be first and foremost the best type of animal. We want these things in the community. We like to see new paint on Jones' barn; we like to see Smith going to town in his automobile. There are few tokens of progress more stable or satisfying than money. The farmer and all other men view this very much alike.

But there is unquestionably another phase. Someone has said that what the country boy needs to keep him on the farm is "some adventure,—and a little money". Perhaps this is a sum-up of cases: applying as well to the farm boy's father, mother, and sisters. Some adventure—to use the word broadly—and a little money,—these are the things which make up the round of life for a large proportion of human beings.

Down beneath the common jobs of our daily existence there runs a curious substratum of mild adventure. Most people are drawing continually upon a hidden balance of something very like romance. Interwoven through the fabric of commonplaces runs a thread of color which will take the form of desire if not of experience. And this color, this variety, this spice, is always arising about us like a faint perfume, to make life attractive.

In town life its well-springs are continually replenished. Amusements, social diversions, recreation, we seek with an insatiable thirst. Man is indeed a social animal. But out in the country,

this side of things is not so apparent. Here, adventure, even in mildest form, is the fruit of a very tender plant, whose nourishment requires our most skillful effort. It is particularly the young people whose cravings herein are keenest. To young John and Mary, farm life may all too easily become humdrum. They are not often able to tap, unaided, the reservoir of variety that nature provides. Continuous contact with elemental forces, in itself, tends to reduce what may be called frivolity to its lowest terms. That is the fault of farm life in the eyes of the young; it approaches too truly the Simple Life, and only old people take pleasure in the simple life. John and Mary are healthy young animals; within them are social instincts forever crying out for expression. There is a certain period in the young person's development when it is the most natural thing in the world to go mentally reaching out, exploring, seeking the bright stimulus of untasted experiences. The joy of living seems beyond any doubt to lie bound up within the mantle of adventure. That is what the open country is barren of; that is what makes the blessings of the simple life sound hollow in our ears. John's lot may not be a hard one,—but that avails nothing. Let him once feel the craving for tinsel and sparkle, and the call of the town has come: just as the deer moves to the salt-lick in spring-time. That is this other phase of this rural life problem and I have begun to wonder if, indeed, it is not fundamental. A thousand men may toil and sweat to mould an image from the clay,—and along comes a single genius who breathes the vital life into it. Our Revival has made me wonder if what the country needs isn't a dash more of inspiration—a little tingling whiff of the seasoning that makes life taste good to use. In plain English: I'm wondering if we do not tend to become better farmers **after** we have developed a true interest in the game.

The question is, what are the tools

at hand? What agencies can be called upon to put savor into the salt? The country church is one; the country woman is another. The school, the farm bureau, the small theatre, the Grange are possibilities. The agricultural college can work indirectly. After our past year's experience in this neighborhood, I am inclined to vote quite strongly for the church. In the ordinary structure and traditions of the church are, ready-formed, almost a complete category of items which make up our social necessity. In its workings we find spiritual balm and regeneration; we find sorely needed inspiration,—for the here as well as the hereafter; we find an exaltation which carries with it all the power and charm of mingled pleasures. The social side of the church may be developed to lead and care for all our gregarious instincts, from a chicken pie supper to a plowing contest. It very readily steps into leadership, all the more potent and steadfast because back of it loom the fine, unshaking teachings of Christianity. The country church has all the raw material for saving communities, as well as souls; it remains for it to translate its effort into terms of the countryside. I have seen the job done round about me in the past year. Our youngsters—and most of the older members too—have been slaking their thirst for adventure in this mild fountain-head. For that is what it amounts to; the experiences following this revival have been nothing more nor less than a moral and social adventure to the bulk of my neighbors. There is something going on all the while, gatherings, entertainments, prayer meetings. There is a current of healthy interest and stimulation all the time in circulation. Granted that we are milling about in a world of small affairs,—if you please; that is a relative matter. It is real; its results are tangible; and it is worth while, if only for the unquestionable leaven of Christianity which is working in our midst. I tell you, when Old John Hamilton is talking about

sending his son away to school to study farming, something has indeed happened that is of interest to the community. Old John is what you might call a good farmer; at least he has saved some money. But Young John will not be a good farmer,—nor any farmer at all, unless a miracle has indeed been wrought: and it appears that has happened. Old John is a great church member; his changing outlook dates entirely from their Revival last year. And so it goes with the many signs that speak of our new era: one and all, they link up to the timely inspirer over the hill.

Of course, one at once inquires about the man who is running this little church; and of course he represents the key-note. But that is another story. It is the significance of the country church as a vehicle by which to carry out the program: that is the point which impresses me. Perhaps the same man might get results via some other method, but I can think of nothing which would have served so quickly and so completely in this countryside. The church, with all its prestige and traditions, gives its workers a tremendous leverage.

I am speaking primarily of the church's social mission; but I do not in the least belittle what may perhaps fall under the head of spiritual calling. The

truly religious side of this question has its very proper and certain value. It rather tends to set upon this sort of work a seal of consecration. Our church has prodded us into a better and brighter group of country people, and done it cleanly and sincerely, all in the name of religion. The accent of morality alone counts for a great deal, for in country, fully as much as in town, there is pressing need to have the weight of public opinion thrown to the right side in dealing with moral problems.

The biggest handicap will lie in creeds and dogmas. It is fundamental that the church must do its work in the fullest sense of the word unselfishly; and whenever strife or competition prevail, this rural service is impossible. But I have faith that in the majority of places, the country church is wonderfully available; that its possibilities for service may become opened up to us like a vista of promise. Certainly, in our own case it has fulfilled.

As I said in the beginning, I am not a member, officially, of our little church over the hill. But I have seen it in action in this farmers' community; and in this matter of making the open country a better place to live and work in, I am sure we list it as one of our big assets.

THE FIVE PROBLEMS

By Isaac Phillips Roberts

Five great problems were left by the Master for us to work out and fundamental principles were laid down by which they might be solved.

The first is Religious Liberty. If the present be compared with the not distant past it will be seen that this is nearly attained. * *

The second, Civil Liberty, has made long strides toward the final end which shall have full expression under laws by themselves. * *

A late part of this greater problem is the Liberation of Woman from her social and servile bondage. * *

The fourth great problem, National Sobriety, is now on the way to solution. * *

The latest, if not the last, of the great problems which we of this generation must face is War. * * We are in the midst of such a world madness the end of which we cannot see. * * But the weak things of the earth shall yet confound the mighty and the purposes of God shall be accomplished in our land.—From *The Autobiography of a Farm Boy*

Foliage, Wood and Wire Fences

BY HAROLD N. HUMPHREY, '11

United States Department of Agriculture

Farm fences have undergone a complete evolution. The different types found on farms scattered over the country are illustrative of the various stages of development that the particular locality as well as the fence industry have undergone. Much of the eastern part of the United

States was originally heavily timbered. This timber was cheap; in fact, had to be gotten out of the way, and it is in this area that we still find what are the remnants of the old-fashioned Virginia rail and kindred types of wooden fences. When the prairie country of the Central and Western States was laid out into farms and fields there was no timber to be used for fences neither was wire available for this purpose; therefore the people used osage orange hedges. At the time when they were first constructed both the rail fence and the hedge row were the economical thing. Today they are not practical for several reasons; the initial cost is too great, the cost of upkeep is heavy, and they make untillable too much ground.

Where land is high in price the fact that rail and hedge fences cover and make untillable considerable ground is a very important one to consider. The amount of ground that a fence makes untillable will differ with the placement of the fence. If it runs between two tilled fields, ground is lost on each side of the fence; if the fence is along the

This table shows the percentage of different kinds of fence in use in three representative agricultural areas. It will be seen that the percentage of barbed wire is greater in the areas where less stock is kept and in the newer farming areas.

Kind of fence	W.Kans. Neb.Dak. &N.Minn.	Iowa	Ohio
	Percent	Percent	Percent
Wide woven wire with or without barbed wire --	5.5	8.0	59.8
Narrow woven wire with from two to four barbed wires strung above or below it -----	10.2	45.5	3.8
Barbed and smooth (not woven) wire -----	84.0	43.5	7.0
Hedge -----	.03	2.1	1.2
Wooden -----	.3	.9	27.9
All others -----	0	0	.05

roadside, land is lost along only one side of it; while if it runs through a pasture field, comparatively little land is lost, as the stock pasture up close to and under the fence. The amount of land that a hedge fence makes untillable is variable. It depends on the size of the hedge or trimming and also on the kind of season. It is commonly figured that a hedge makes the ground practically useless for crop raising for a distance equal to the height of the hedge. It draws on the soil fertility and leaves little for the crop within this distance. If the season is a dry one the hedge will do more damage than if the season is wet, for in a dry season it draws on some of the moisture that would otherwise go to the crop. The amount of land lost to cultivation attributable to such causes is considerable. According to Bulletin 321 of the Department of Agriculture, 802 rods of woven wire fence will waste an acre and an equal stretch of picket fence will achieve the same result. A worm rail fence can waste an acre in 436 rods and a hedge in 347 rods. On the other hand, a straight rail fence takes 739 rods, a barbed wire fence 772 rods and a board fence 817 rods. All of these figures show only the amount of land lost on one side of a fence. If the fence runs through a cultivated field and land is lost on both sides, the figures must be divided by two. Under such conditions, 401 rods

roadside, land is lost along only one side of it; while if it runs through a pasture field, comparatively little land is lost, as the stock pasture up close to and under the fence. The amount of land that a hedge fence makes untillable is variable. It depends on the size of the hedge or trim-

of woven wire fence would waste an acre; 386 rods of barbed wire, and so on.

The annual cost of upkeep of hedge is another factor that makes this kind of fence a very expensive one. If it is kept trimmed so that it will make a good fence, considerable labor is required.

At the present time very little fence is being constructed on farms other than the different types of wire. The question confronting the farmer is what kind of wire will best suit his needs, last the longest and cost the least to maintain and repair. This question will have to be answered differently by the individual farmers. The ranchman who has several hundred or thousands of acres on which he pastures several hundred or thousand cattle, can not afford to put an all No. 9, 10-47 woven wire fence around his land. A barbed wire fence is sufficient to keep his cattle in bounds and if one or several of them are injured somewhat by the barbed wire, such injury would not offset the additional investment which he would have to pay interest on if he had a woven wire fence. On the contrary, the Ohio farmer has to fence for all kinds of farm stock. He must have a fence which is pig-tight and horse-high. On this type of farm a barbed wire fence is not an economy, for if a valuable horse is blemished or killed by it the farmer loses enough

money to pay the difference in the original cost of a few hundred rods of fence. These principles have been quickly recognized by both the western and the eastern farmer, and this fact is clearly shown in the table. The western farmer has 84% of his total amount of fence barbed wire, and the Ohio farmer has only 7% of his total amount of fence barbed wire.

A TEST FOR FENCE WIRE

In the construction of a woven wire fence it does not pay to try to cheapen the initial cost by the use of a light grade of wire. This will only serve to make the fence a more expensive one in the end, for its life will be proportionally less. Many manufacturers advise and a good many farmers have come to the conclusion that it does not pay to construct a fence of wire smaller than a number 9 or 10 gauge. The spelter or, as commonly called, galvanized, is a big factor in determining the life of fence wire. The large size wire carried proportionately more spelter than the smaller ones. A standard and simple test to determine whether or not the wire is properly galvanized can easily be made by the farmer. A solution should be made of copper sulphate (commercial blue vitriol). The proportions should be about 36 parts of copper

(Continued on page 590)



This Type of Fence Wastes a Strip of Land Equal to Its Height

Fertilizer from the Air

BY E. J. PRANKE, Niagara Falls

IN MIXED fertilizers the total nitrogen cost is as much as the phosphoric acid and potash combined. Cheapening the cost of nitrogen is the primary step in reducing fertilizer costs and it is to this purpose that the air-nitrogen industry is dedicated. But to merely add another material to the long list of nitrogenous substances, even in considerable quantities, would help matters but little. A profound change must be made in the grades of our fertilizers and in their delivered cost, and this is possible only through the production of nitrogen on a large scale.

The process of fixing nitrogen from the air has been described so frequently in chemical literature that only a brief description need be given here. It is being practiced on this continent at the factories of the American Cyanamid Company at Niagara Falls, on the Canadian side. They utilize 30,000 continuous electrical horsepower, and are producing 64,000 tons annually.

Lime, coke, and air are the raw materials used. The lime and coke are combined in the electric furnace at a temperature of about 2300° Centigrade to form calcium carbide. This is cooled, ground to a fine powder, and placed in electrically heated ovens into which is forced a current of pure nitrogen. The nitrogen is obtained by liquefying air under strong compression with cooling, and fractionally distilling the pure nitrogen from the liquid air. The nitrogen is greedily absorbed by the carbide at the high temperature employed, and forms the new compound calcium cyanamid. The product thus obtained is

Now that the World makes War, much of the Nitrogen which Man by recent inventions has wrested from the air goes back to the air through the mouths of guns. But when Peace does come, we may well look to this new process for aid in replenishing our acres. In this article Mr. Pranke points out the agricultural possibilities of a process now operating and, speaking as one within the industry, urges a water-power policy that will facilitate its development.

ground to a fine powder known as crude cyanamid, and from this is derived directly, by hydration and slight oiling, the fertilizer material commonly known as cyanamid. This is the principal product of the present factories

and is used by fertilizer manufacturers as a source of nitrogen in mixed fertilizers. The quantity that can be used in the ordinary complete mixtures containing acid phosphate is limited by reason of the large amount of lime contained in the cyanamid.

Crude cyanamid has one property of supreme importance. When treated with steam under pressure it yields up the whole of its 21 or 22 per cent of nitrogen in the form of ammonia gas. The gas may be absorbed in sulphuric acid, forming ammonium sulphate; or in phosphoric acid, forming ammonium phosphate; or in nitric acid, forming ammonium nitrate; or the ammonia can be mixed with air and passed through a red hot platinum screen and oxidized to nitric acid, or the ammonia may be sold directly as aqua ammonia or be converted to anhydrous ammonia for use in refrigeration. With the exception of the ammonium phosphate all the above products are being manufactured from cyanamid on a commercial scale. A large factory for the production of commercial ammonium phosphate is in course of construction.

From the standpoint of agriculture, the ammonium phosphate is of the most interest, as it is this material that promises to revolutionize our fertilizer industry. The commercial form of this material contains about 13 per cent ammonia and 47 per cent available phos-

phoric acid. The ammonia content can be increased to 20 per cent and the phosphoric acid reduced to give any desired ratio of ammonia to phosphoric acid. It is mostly water-soluble, and its physical form is that of a well-cured acid phosphate, perfectly stable in composition. Its revolutionary qualities are,—first, unlimited amounts can be produced, depending only on the quantities of cyanamid available, which in turn can be made in practically unlimited quantities; second, through the utilization of cheap cyanamid-ammonia it can be produced at lower cost than equal quantities of plant food in other forms and a third, its concentration reduces handling charges to one-half or one-fourth the handling cost of present fertilizers.

The quantity of fertilizer nitrogen produced in the form of by-products of other industries, is, of course, limited by the amount of main products produced. Any attempt to force production of by-products beyond the normal rate increases the cost per unit. The nitrogen that is mined in the surface of the earth becomes increasingly inaccessible, and more costly to recover as the richer deposits are exhausted. The air-nitrogen method, on the contrary, has no natural obstacles to practically unlimited growth, and with every increase in size of operation the unit production costs are decreased.

For approximately every two tons of cyanamid, containing four-tenths tons of nitrogen, there is consumed one electrical horse-power continuous through a year. Cheap power, therefore, is essen-

tial to the manufacture of cheap nitrogen. But cheap power, under present conditions in this country, is unobtainable. Our available water powers, in the first place, are costly to develop; topographical and meteorological conditions in the United States are very unfavorable; compared with the conditions in Norway, for instance. Interest rates in this country are high, and the demands of American bankers for financing hydro-electric developments, are high, largely because of the present status of water-power legislation in this country. Hydro-electric energy in this country is burdened with a tremendous interest cost, amounting to 80 per cent of the total annual costs, while only 20 per cent goes to operation, superintendence, and upkeep.

The ultimate solution of the problem is cheap money. The first steps to remedy the existing situation must be a solution of the legal difficulties. It is not too much to say, in view of the great importance of the subject, that it is the duty of every citizen to use his influence, when the opportunity offers, for the formulation and enactment of equitable and constructive water-power laws.

With our normal consumption of fertilizer nitrogen at 200,000 tons of nitrogen per annum, as in 1914, and increasing at the rate of 10 per cent per annum, nitrogen prices cannot be expected to decrease unless production overtakes the present demand, and there is no promise of this occurring except it be through the fixation of atmospheric nitrogen on a large scale.

SIGNS OF SPRING

1. "Honestly, I haven't got a *thing* to wear."
2. "Say, pop, can I have the buggy for tonight?"
3. Longer days.
4. Warmer sunshine.
5. Mud.

A. P. N., '18.

Agricultural Mobilization

An Editorial From The New Republic

IT IS A RECOGNIZED commonplace that successful wars today must be fought with factories as well as with ships and guns. The equal importance of agricultural mobilization is not so generally recognized. Her failure to take this into account was one of England's principal sources of weakness during the first years of the war. In 1914 Germany's agricultural production per square mile of agricultural area was three times that of the United Kingdom. During the months of voluntary enlistment England put herself at a further disadvantage by permitting the indiscriminate withdrawal of men from her farms. As late as the autumn of 1916 her farmers complained that they were not able to harvest even such crops as they had raised. The government then offered to release men from the front on a twenty-day furlough. But the farmers insisted that what they needed was not just men, but experienced farm labor. Two years after the outbreak of war England had failed to mobilize her agricultural army.

This neglect reacted injuriously upon all industry and especially upon the production of munitions. * * And, of course, England's food problem has been aggravated by a parallel neglect of agricultural output, production and distribution in the United States. The abnormal rise of wages in our munition centers made heavy drafts upon our already depleted agricultural army. Food prices soared. We had an epidemic of strikes. Some manufacturers were unable to complete their contracts on time. During 1916 many manufacturers announced a voluntary increase in wages. But the increase in wages throughout the country has been much less than the increase in food prices, and especially in the cost of the basic commodities upon which wage-working families principally depend. If we permit this evil to grow it will not only bring

widespread and unnecessary suffering, but will seriously cripple our military operations.

The President has just ordered the Federal Trade Board and the Department of Agriculture to investigate the "allegations before committees of Congress that the courses of trade in important food products is not free, but is restricted and controlled by artificial and illegal means." And so we are about to begin another of our chronic investigations into the evils of food speculation. Certainly food speculation is a serious problem. But such investigations take time and the spring planting, like war, is almost upon us. And how are we to check speculation, or institute improved systems of distribution, if we do not even know what our food supply is or where it is located? These are things, that except with respect to a few major staples, we have never tried to find out. What are our present available agricultural resources? Is our yield per capita much greater than Germany's? And as for agricultural laborers, we have not taken a census of them since 1909.

Had Germany been equally slack, she would have been starved out long ago. Her amazing economic resistance is due not only to summary measures against speculation, such as the fixing of maximum prices of food, but especially to the fact that she has organized her agricultural army and counted every cow, pig, fish, straw and kernel of corn. On the twenty-second of October, 1915, she took a census of bread-corn, oats and flour; on the eleventh of November, a national oil and fat census. On December 1 she counted all animals and fixed the prices of such seemingly unimportant commodities as venison, hares and cock-pheasants. On the fourth of December, having taken full account of these stocks, she fixed the wholesale and

(Continued on page 596)

The Length of the Laying Period as an Indication of the Laying Capacity of Fowls

PART II A PRACTICAL PROBLEM OF SELECTION

BY JAMES E. RICE

Professor of Poultry Husbandry, in Collaboration with O. B. Kent, '12
and F. B. Brooks, '17

AS a result of the studies reported in the March issue of *The Countryman*, and of other observations which cannot be included here, a simple, definite program of selection is given as an illustration of one of the ways in which the three laying factors under consideration may be applied in a practical way.

First Step.

The first step in the program is to hatch the chickens at the season of the year for that particular section of the country and variety of fowls kept that experience has taught will enable them to mature sufficiently to begin to lay normally just before very cold weather strikes them which, for Leghorns in New York State, is between about the second or third week in April and the last week in May, but which probably would be two or three or more weeks earlier in the case of the heavier and slower maturing varieties.

Second Step.

To mark the chickens of each hatch so that all of the pullets in any particular pen will be of the same age.

Third Step.

Place on the wall in the pen the date that the pullets were hatched and the date when observations should begin and end; namely, when they are about eight months of age, and the date when observations should cease, i. e. about four or five months later when they are about eight or nine months of age.

Fourth Step.

Observe the pullets either by trap nesting or by external variable physical characters and place a sealed metal band numbered consecutively, A-1, A-2, A-3, etc., on the left shank of all birds that commence to lay during the time designated. Further marking or recording of the birds after they have once been leg banded until the following fall is unnecessary for practical purposes.

Fifth Step.

Commence trap nesting or observation of the variable physical characters of the pullets in each flock toward the close of their first laying year at approximately September 1st. Place a leg band on the

right shank of the birds that lay after the time specified.

By this method of identification we will have four classes of fowls, as follows:

1. Those that began moderately early to lay, i. e. before about eight months of age, and continued late to lay at the close of their first laying year, i. e. about September. They will have leg bands on each shank. *All will have long laying periods and all will be especially high producers.* They may be retained for breeders.

2. Those that began comparatively early to lay, i. e. before eight months of age and ceased to lay comparatively early, i. e. before about September 1st. They will have leg bands on the *right shank only.* *All will have a medium to long laying period and will be medium to good or high producers.* They may be retained for commercial laying.

3. Those that began moderately late to lay, i. e. after eight months of age but continued to lay late, i. e. after September 1 or thereabouts. They will have a *leg band on the right shank only.* *All will have a medium to long laying period and will be medium to good or high producers.* They may be retained for commercial laying.

In table II is shown the number of birds in each of the group, the average age when they laid their first egg, the average length of their laying period and average production the first, the second, the third and for three years, and the average age when they laid their last egg at the close of the first laying year. The contrast in production between the first group and the fourth group is striking. In the first group 81 birds, having laid when they were an average of 209.3 days old and having an average laying period of 303.3 days, and averaged to lay 166.28 eggs the first year, 140.62 the second, 123.88 the third, or an average of 143.59 eggs per year per bird for three years, as compared to group four, 28 birds, average age 272.2 days, average length of laying period 174.5 days, and average production the first year 90., second 107.6, third 95.5 eggs, and an average

for three years of 97.8 eggs, or a difference of 62.9 days in age, 128.8 days in the length of the laying period and the difference in production first year was 76.28 eggs, second year 33.02 eggs, and third 28.38 eggs, and three years combined, 45.79 eggs. By eliminating at the end of the first laying year, about September 1st, the 28 birds in group 4, the breeder would be discarding birds all of which would have been low producers each year thereafter if he retained them.

It will be seen that in group 2, 44 birds averaged to lay when they were 207.7 days old, i. e. nearly the same age as the 81 birds in group 2, but that they had a length of laying period of 245.4 days as compared to 303.3 in group 1 or a difference of 57.9 days, nearly two months, and that the egg production the first year of group 1 was 166.28 eggs, as compared to group 2 122.32 eggs, or a difference of 43.96 eggs. The second year 140.62 as compared to 107.02 or a difference of 33.6 eggs the second year; and the third year 123.88 as compared to 95.39 or a difference of 28.49 eggs, and per year for three years 143.59, compared to 108.26 a difference of 35.33 eggs, which shows that if a person had depended entirely upon retaining the pullets that commenced to lay by the time they were eight months old and had not used the laying persistency factor at the close of the first laying year he would have been retaining a number of

birds that, based on their first, their second or third year's production or three years combined, would have been much lower producers. In other words, he would have retained birds that either did not possess the inherited tendency to lay many eggs or did not have the vitality to stand up under the strain of heavy egg production.

If we compare the 13 birds in Group III with those in Group II we observe that they began to lay when they were an average of 89.5 days older, or approximately 34.1 months older and that they had an average laying period of 211.3 days or 34.1 days shorter than those in Group II, and that the egg production the first year was 114.31 as compared to 122.32, a difference of 8.01 eggs. Second year, 129.15 as compared to 107.02, a difference of 22.13 eggs. Third year, 114.05 as compared to 95.39, a difference of 18.69 eggs, and an average production per year for three years of 119.18 as compared to 108.26, a difference of 10.92 eggs per year per fowl more in Group III, all of which indicates that if the breeder were to discard all of the pullets that failed to lay at the time they were eight months old he would be losing some very good birds and that the 13 birds in the group would have been better birds than the 44 which he retained as early producers in Group II.

(Continued on page 592)

TABLE II

A Simple Program for Selecting and Marketing Fowls with regard to their Laying Capacity by means of Three Fecundity Factors, the Laying Precocity, the Laying Persistency, and the Length of the Laying Period.

166 Single Comb White Leghorn Fowls at Cornell University.*

Group I. The first pullet egg laid before 8 months of age and the last egg of the first laying year after Sept. 1st. (Marked with leg band on each shank).

Number of birds	Average age at 1st egg	Ave. No. of days of laying period	Ave. Prod. the 1st year	Ave. Prod. 2nd year	Ave. Prod. 3rd year	Ave. Prod. for 3 years	Average age at last egg
Group I							
81	209.3	303.3	166.28	140.62	123.88	143.59	514.4

Group II. The first pullet egg laid before 8 months of age and the last egg of the first laying year laid before Sept. 1. (Leg band on left shank only).

44	207.7	245.4	122.32	107.02	95.39	108.26	453.7
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Group III. The first pullet egg laid after 8 months of age and the last egg of the first laying year laid after Sept. 1. (Leg band on right shank only).

13	297.2	211.3	114.31	129.15	114.08	119.18	509.5
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Group V. The first pullet egg laid after 8 months of age and the last egg of the first laying year laid before Sept. 1. (No leg band on either shank).

107.6	95.5	97.6	446.7	28	272.2	174.5	90.
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*Three birds of the original 169 fowls not included on account of abnormal production, one laying only three eggs in three years, and the other laying so continuously that it was impossible to distinguish when the first year ended and the second year began.

The Soils and Agricultural Development of New York

X. SPECIAL CROP SOILS

BY E. O. FIPPIN

Extension Professor of Soil Technology at Cornell University

IN addition to the general soil conditions in the different divisions of the state that have been described in preceding articles in this series, there are smaller areas of soil of unusual or abnormal character that merit special attention. They are the soils that represent an extreme range in texture or in content of organic matter. They are the areas of light sandy and gravelly soil on the one hand and those of fine, dense, clay structure on the other hand. With these is included numerous areas made up largely of partially decayed plant materials commonly known as muck and peat soils.

The extreme textural properties of the former two classes and the high proportion of organic matter in the latter group, give them properties that adapt them to special types of crops and require distinct methods of management. The great majority of soils of intermediate texture and of medium content of organic matter, constitute the large body of soil that can be used with fair success for a wide variety of crops and that respond fairly well to the common run of soil management practices. They are the general purpose soils of the state. On the soils of extreme character now under discussion the selection of crops and the adaptation of the treatment to the character of the soil requires special attention if good results are to be secured.

The most prominent of these three groups of soil is the muck areas. Muck is the result of the slow accumulation of plant remains that have undergone a somewhat advanced stage of decay under swampy conditions. As a result of this decay the structural properties of the

plant tissues have largely disappeared, the material has taken on a dark brown or black color, it has a fine loamy quality and a large part, commonly known as humus, may be dissolved in suitable solvents. This advanced stage of decay marks the increased agricultural value of such soil for crop production since it indicates physical and chemical conditions that can supply the needs of the growing crop.

It is reasonable to expect to find in such areas of land all stages of decay of the plant materials from the earliest fibrous material down to the last fine loamy form. These depend upon the age of the materials and the conditions of saturation under which they have lain. The earlier stage of decay when the material is fibrous and woody or chaffy, constitutes the peat stage which has low value for crop production. The stage of decay varies considerably in different areas, in different parts of the same area and at different horizons of the same area. Where the wetness and saturation have been most persistent and uniform, decay has been most impeded and the material is likely to be very peaty. The source of the marsh water and the extent of its aeration affects the decay, ventilation promoting the process. Consequently the surface soil is generally more thoroughly decayed and is better muck than the subsoil.

A considerable variety of plants have contributed to the formation of muck and peat soils and the proportion is not necessarily the same in different areas or at different levels in the same area. Mosses generally enter largely. Swamp plants and water grasses add their mite. As the area reaches the water level,

flags are likely to come in and add a layer of material and finally ordinary upland herbaceous plants and trees make their advent. Most of the muck areas have been covered by a heavy growth of timber. Of the broad leaf forms, black ash, elm and soft maple are most common. These forms generally go with the better classes of muck. The more peaty areas are likely to grow tamarack and cedar, and these may be sprinkled through the growth of broad leaved forms. These tree forms also contribute to the latter layers of soil. Experience

bon constitutes the bulk of the material. This also suggests that advanced decay increases the proportion of free carbon and consequently of stable resistant materials that have a much lower humus value than freshly decayed plant substance.

There is a considerable variation in the composition of muck soil as may be suggested by the following table:

Organic matter	40. —85.0%
Nitrogen	1.0— 3.0%
Phosphorus	0.2— 0.6%
Potassium	0.1— 0.7%



Onions on a Muck Soil

indicates that where the cedar contributed largely, the resinous material makes a woody peaty soil likely to be of low crop value for many years after clearing.

The outstanding character of muck soil is the high per cent of organic matter and the low per cent of mineral matter. In this process of decay the carbon and the combined nitrogen seem to accumulate. The free form of the carbon gives the dark or black color. Coal is merely an advanced stage in the accumulation of plant remains in which free car-

The most noticeable characteristic is the high per cent of nitrogen and the low per cent of potash.

The many lakes, ponds and poorly drained sags in the land surface of New York State left by the glacial ice have permitted the formation of numerous bodies of muck and peat soil. They are widely distributed and of widely varying depth, area, shape and position. They are most numerous on the Great Lakes plain and in the western part of the State.

The most noteworthy areas are the

Florida bed in Orange County, those just south and east of Oneida Lake, the Montezuma marshes at the foot of Cayuga Lake, smaller areas in Wayne County, and at South Lima in Livingston County, near Arkport in Steuben County and the Oak Orchard area in northern Genesee County. Not all of any of these areas have been cleared and put under cultivation. In addition part or all of many smaller areas have been developed.

Through the central part of the state, beds of marl commonly occur under the muck. This is a form of soft limestone apparently deposited as a result of the growth of a water plant. Some of these beds are of great depth and purity and, as at Caledonia, may be covered by only a foot or two of muck.

The smaller and deeper areas of muck are generally the safest for cropping purposes. Such areas have the better water supply—a critical problem with most muck soil. Irrigation is resorted to by some growers—both over-head and sub-irrigation.

While drainage is necessary, over-drainage is to be avoided. Many shallow, rather than a few large, deep ditches are best.

Crops useful for their vegetative part—leaves, stems and roots—are best suited to muck soil. Seed crops are generally unsuccessful. The high amount of organic matter and nitrogen causes this relation. The seed crops run to vine. On the other hand the same property of the soil produces the large yield and the crisp quality of vegetable crops and the large growth of forage crops.

In the former group are lettuce, celery, spinach, onions and cabbage. Potatoes, of rather poor quality, are also grown. In the latter group are grass and corn for silage. Tremendous yields of timothy are secured. Space will not permit a full discussion of the relation of crops to the soil.

In the way of management, drainage is the first step. Then rather deep plowing followed by thorough working down. Protection from blowing is to be con-

sidered. Decay should be promoted perhaps by the use of manure. In spite of the high amount of organic matter, it is probable that the actively decaying organic matter of manure and perhaps also of green crops is valuable on such soils.

Fertilizers must be used. First of all potash is important. The material should be very high in that element both for yield and quality. Phosphoric acid in acid phosphate form is generally beneficial and a moderate application is made. Raw rock is of very questionable value, especially in New York where most of the muck is fairly rich in lime. Nitrogen, especially in the early years of cultivation is very necessary.

Since the vegetables grown are of high acre value, they justify a large application of fertilizer, up to a ton or more per acre of a high-grade mixture. Of course, at present the use of potash is in abeyance.

Much popular interest now centers in the development of muck soils and many projects are under way. There are in the neighborhood of six or eight hundred square miles of such soil in the State, a small part of which is salt water marsh on Long Island.

It requires a considerable amount of the gambling spirit to take hold of the development of muck land. The peculiarities of such soil and the fickleness of the market for many of the crops produced, has led many persons to realize that fact. Personal experience is a large factor in success and the difficulties would generally suggest a cautious advance.

Successfully cropped areas are sometimes held at very high values—a thousand dollars or more per acre—but a general valuation of such land at even half or a third of that amount is of questionable wisdom. Unless special value has been demonstrated, good general farm values are the best basis of calculation.

At a few places in the State, notable areas of sandy soil have been formed. These are usually accompanied by gravel areas. They represent the thorough sorting action of flowing water

which has carried away all the finer material. They usually represent the point of discharge of large rivers into ancient glacial lakes, in the form of delta plains. The most notable of these are

that will warrant the large use of organic matter, careful fertilizing and probably also irrigation may make these soils useful. Sewage irrigation may find a place in their improvement.



Corner of a Muck Field

around the base of the Adirondack Mountains, beginning with the plain between Albany and Schenectady, thence northward to the Saratoga and the Plattsburg plains; The Malone, Carthage and Adams plains on the northern and western side, and the Oneida, Trenton and Gloversville plains on the southern side. North and especially east, of Rochester is a small sand plain. Finally, all the middle two-thirds of Long Island is a huge gravel and sand pile covered by a thin, uneven veneer of silty loam.

All these areas run to a rather barren character. Their coarse texture and depth give them a very low moisture supply and their open structure causes organic matter to decay rapidly so that crop producing value is naturally very low. The extreme stage is drifting sand dunes. A considerable part of all the areas is given over at present to scrubby trees and shrubs. The Rochester area being in the main of a fine, loamy texture, is the best of the lot and has very little land of the very poorest quality.

Future requirements for farm produce

In crop relation they are warm and early, and the better grades may be used for early vegetables. Lacking in lime they will not readily grow legumes. These sandy soils present difficult problems of improvement.

In the quiet, deep waters of the glacial lakes that formerly occupied considerable areas, the finest soil sediments were deposited to form deep beds of heavy clay. These are found along the inner margin of the upper Hudson Valley and in the Champlain Valley, along the St. Lawrence and in scattered smaller areas from south of Oneida Lake along the margin of some of the Finger Lakes and near the Great Lakes, particularly east and north of Buffalo. These are generally broad, undulating plain areas. Their flat surface and the dense character of the soil produce poor drainage but seldom result in a swampy state. They are strong soils, cold and late and best adapted to grain and grass. The best grass meadows and the best yields of small grain are reported from the well

(Continued on page 598)

II. Mediaeval Women as Wage-Earning Farm Hands

BY BLANCHE EVANS HAZARD

Assistant Professor of Home Economics at Cornell University

WHAT a farmer's wife's wages would buy is the real measure of the amount of her earnings. First in the line of food her earnings might be expected to be expended. It cost then 2 cents per quarter (8 bushels) to have malt manufactured from barley. Sometimes the price ran as high as 10 cents in 1299, and 12 cents in 1361, but these higher prices were probably due wholly to the monopoly of the service possessed by the men who held a franchise in the manor mill. Fish was never cheap in the Middle Ages and "could hardly be consumed by the poorer classes between 1250 and 1400 except as a luxury or a relish. Even herring and ordinary salt and stock fish were relatively dear; and lampreys, salmon, pike and eels were beyond the peasant's purse." The lord of the manor owned the fishpond and regarded it as a valuable kind of property. He either let the pond out

either case. By 1300 a hen was worth 3 cents, a pullet 1½ cents, a goose 7 cents, a duck 4 cents, and a dozen pigeons 6 cents.

Spices, confectionery and medicines were all prohibitively high priced imported articles. Pepper was the common seasoning for all made dishes and was used even in pastry. The condition of meat then was lean and hard, when it was not over-ripe, and needed spices urgently to make it appetizing. But peasant people could not buy pepper at 24 cents a pound, so they used pungent and sapid plants, like coarse onions, and recked not when, after the plague, the price of pepper ran up to about 34 cents. Nor could they buy spices for Christmas puddings. Cinnamon was bought in London in 1264 for the kind at 18 cents a pound, but the average price before 1400 was 28 cents a pound. The price of cloves went as high as \$5.00 a pound



Before the Day of the Binder

at a considerable rent or farmed it himself. The value of fish was rising in the 14th century along with wages, so the poor peasants gained nothing in purchasing power. In 1350-1400, herrings sold at 3½ for a cent, when from 1260 to 1350 they had sold at 7 a cent.

A chicken pie was a luxury too. A hen, in 1260, sold for approximately 2½ cents, and a goose for 4 cents. That was over a day's wage for a woman in

in 1329, but by 1399 it had dropped as low as 80 cents, though the average price had been about \$2.00 a pound. This was as much and even more than the total value of all the work of three villeins on Battle Abbey Manor for a year, which makes one realize that those peasants in the 13th and 14th centuries must have grown up and died with no hope of buying or even tasting spices, unless perchance after some banquet at

the manor house, a servant got a bit of meat or pudding seasoned for special noble guests, and smuggled it down to one of the village huts.

Those huts or cottages of the laborers, by the way, were built on the bare earth with upright posts, wattled with

with fur, such as the great ladies wore, they did not aspire even to buying first quality cloth, but did the best they could in their own looms, and urged the men of the family to make the shoes of the family between their various jobs of tool making.



The Landlord Lived in Style

willow or hazel rods, and smeared outside and in with clay or mortar. Half way up was a rude floor made of unhewn poles, and reached by a ladder. The whole was thatched with straw reeds or broom. Sometimes the hut was wholly made of mud or clay, kneaded with a little straw and a few sticks to give it cohesion, and carefully thatched to keep the wet from the walls. Outside each hut there was a garden and a curtilage; inside a fireplace. The women wove woolen cloth and homespun linen here in winter days, while the villeins and cottars made a supply of tools for the next year's use.

Table linen they could not afford to buy, for even in 1260 the price was 72 cents for a dozen ells (yards), while the second quality of cloth per piece of 24 yards was \$5.00. Cloth caps for the boys and men of the family cost from 8 to 16 cents in 1377. Some boots for boys cost 8 cents in 1321. So at the same time that these peasant women never dreamed of owning the costly foreign fabrics or garments trimmed

Fitzherbert, a 15th century writer, describing manorial life and advising villeins about farm equipment, told them that besides carts and ladders,—a flail, an axe, a hatchet, a pin-augur, a spade and a shovel were necessary. "To buy all these * * * is costly and a thrifty man will make them himself. The time for this is in the middle of the winter when the farmer sits by the fire. He should get his wood between Michaelmas and Martinmas, and should dry and straighten it. He should tooth the rakes with dry willow, having bored holes with his wimble, and wedge the teeth with oak."

Though the men and women alike could make part of the necessary supply of tools, shoes, and clothing, they had to buy other implements absolutely necessary for farming, and utensils for cooking. The men had to go to the blacksmith for the iron parts. The women had to buy brass or copper kettles. "Every farmhouse of any importance had one or two brass or copper
(Continued on page 600)

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We wish to announce the election of Russell Lord to the position of Editor-in-Chief for the year 1917-'18, of E. B. Sullivan to the position of Business Manager and of C. W. Bolgiano to the position of Circulation Manager.

April's Promise April brings Spring, when the world throws off its robe of ice and snow and prances in the sunshine; when its people "wake to find the smile of spring reflected in the skies" and take a new lease of life, and love of it. The poetical side of this particular "vernal advent" Mr. Alexander has adequately treated in his poem *April Promise*, published on page 547 of this issue; all that remains in this regard is to thank him for having said things which throb within all of us at this time of year.

But this April promises much which is unpoetical; in many ways it brings us a sad spring. The last two Aprils have seen the old world at fierce war; this one may see the slaughter intensified and extended. We will not always be as glad as the weather this spring.

And yet there is a more real and more joyful promise to it all than may at first appear. The World is having its "cold and cruel winter" of Warfare. But just as sure as Spring follows Winter, shall peace, in due season, follow carnage. There is nothing like an April day to remind us that "the upward signs of birth and life are greater than the signs of death."

**A Lesson from
the Towns**

For many of us who live in the clear open country it is difficult to understand why rural children are less healthy than city children. It is not so strange that we should think children reared in the fresh pure air of the open country would be of stronger vitality than those in the narrow and crowded streets of our cities. Not so strange that we should hold a mistaken idea on this question when we recall that every summer thousands of so-called "fresh-air" children leave the cities for a month to become invigorated with the freshness of the open country. Why, then, according to the reports of physicians who have made exhaustive studies, are rural children more defective in every respect than city children? Surely it cannot be that the natural conditions of the country are less healthful. No, on the contrary, we believe the opposite is true. The fault lies with the rural inhabitants and not with the natural environmental conditions of the country. Formerly the reverse of present conditions was substantially true. But people of the city have been at work these few years and among other things they promoted hygiene in the homes and public schools. At the same time very little has been accomplished to promote hygiene in the schools of our rural districts with the result that the children of our cities, who are at natural disadvantages—living in crowded dusty streets, are actually, in every respect, in a better physical state of health than our children of the clear open country. Thanks for their example! They have set a pace which we may far outstrip.

**Not Only for
the Farmer**

How long before our legislators and congressmen will stand united for that legislation which is for the best interests of agriculture? How long before our state and national representatives will realize that a law which tends to promote agriculture is not "class legislation"? There is a limit to our total income and each industry is competing for its share. Therefore we are prone to believe that whatever legislation benefits one industry does this at the expense of the others, and we call it "class legislation." But as Napoleon said "agriculture is the foundation of all commerce and industry." What benefits the fundamental enterprise—agriculture—benefits all. We forget that three times every day—Sundays and holidays not excepted—every man, woman and child are engaged in consuming the products of this enterprise. Many are reluctant at admitting, but it is true that we are all most vitally interested in agriculture.

Just recall what the women in New York City did last February when the prices went abnormally high on food stuffs. Probably the majority of them never saw a farm but they were interested in getting the farm products to the extent of making riots. There is no other

thing that the people of the world are so entirely dependent upon as farm products. Germany expected at one time to conquer England—not by land or by sea but by cutting off her food supply. Lack of munitions are not to be compared with lack of farm products. German officials have been known to say that long before now they would have been conquered had it not been for Germany's highly developed agriculture. Economists tell us that every low yield of rice in Japan is followed by a decrease in the population—more dying and fewer being born—and that every high yield of rice in Japan is followed by an increase in population—fewer dying and more being born.

As a nation and as individuals, we are vitally interested in agriculture, because in it we are all, either as consumers or producers, engaged. Again we ask how long before our lawmakers will realize that legislation which promotes agriculture also promotes the best welfare of our nation and its individuals. Frequently laws pertaining to agriculture come up for our approval or disapproval. They may be good; they may be bad, but let us not pass on bills relating to the nation's most fundamental enterprise without giving them due thought and study.

The Church Comes Back In the good old days, of which we hear so much and from which we seem to learn so little, "going to meeting" was as much a part of the rural family's Sunday program as washing was a part of their Monday program. The church has a wonderful grip on them and it did them a lot of good. But it was only a Sunday-church, and there came a time when the pressure of other interests shoved the old-time Sunday out of their lives; the preacher preached brimstone to fewer and fewer people and more and more empty pews; students began to write and talk about the "decline of the rural church," and after a while the church itself admitted something was wrong and tried to think of a way out.

By no means all rural ministers are incompetent failures obeying a rural "call" in despair of one from the city, though a perusal of the "decline" criticisms might so indicate. Here and there is a man who in the din of this busy century has come to know that action-preaching speaks louder than words. Mr. A. B. Genung, '13, pays tribute to an anonymous one of this pioneer tribe in his article "Our Church." You will find it on page 557. We plan to follow this article with others, not lamenting the decline but proclaiming the revival of the rural church as a force in American life.



Campus Notes

Results of New Grading System

In view of the apprehensive rumors regarding disastrous results of the new grading system in the College of Agriculture, as regards an alleged record-breaking list of "bustees," *The Countryman* asked Secretary Betten of the College of Agriculture for a statement as to how the system had really worked out. This is the statement:

"Without a thorough analysis of the term grades it is impossible to state how the new marking system has worked out, but apparently the change was made without difficulty.

"The purpose of the Faculty in making the change was to obtain more uniformity as between the departments; it was not done primarily to make the grading upon the whole more severe or less so. This seems to be confirmed by the fact that about the usual number of students were dropped from the College at the end of the term. The removal of the grade of condition has increased the number of failures and this will undoubtedly increase correspondingly the number of suspensions, although the effect is not apparent with the first term under the new system. For the present the effect is shown in that more students than ever before are now on probation, and this presages more severe action at the end of the year.

"The attention of the students needs to be particularly directed to the rule on accumulated deficiencies, a rule not familiar because applied only in this college. No student may accumulate as much as ten hours of failure and decreased credit, except that seniors are allowed twelve hours. This means that students must clear up their record as they go along and the abolition of the

condition brings many near the danger mark."—*Cornelius Betten, Secretary and Registrar.*

Two hundred and forty students were "busted" from the University following the first-term finals. The College of Arts and Sciences dropped more than twice the average of the past ten years. Thirty-four were dropped from the College of Agriculture, a number exactly equal to the average of the past five years.

Agricultural Editors to Meet

The fifth annual conference of the American association of Agricultural editors will be held at Cornell on Thursday and Friday, June 28 and 29. This association is made up of the editors of the agricultural colleges and experiment stations, and meets annually to exchange ideas in connection with the publications of the various institutions. Acting Dean A. R. Mann, who formerly edited the Cornell publications, and Professor Bristow Adams, the present editor, are members of the Association. It was largely through Professor Adams' efforts that the coming meeting is to be held in Ithaca.

The first meeting was held at the University of Illinois in July, 1913, the next at the University of Kentucky at Lexington; then at Madison, Wisconsin, and last year at Manhattan, Kansas. The Cornell meeting, therefore, will be the first held in any of the Atlantic seaboard states.

The Babcock Test Supplanted?

The Dairy Department has ordered a new machine, known as the Mojonnier Tester, for testing the percentage of butterfat and total dry matter in milk. It is said to be much more accurate than the Babcock Tester, making tests to within one one-hundredth of a per cent. It works by evaporation of the liquids in an oven which is also a vacuum chamber. The weighed amount of milk is placed in the oven and when all the moisture is evaporated, the dry matter is weighed. To find the percentage of butterfat, the weighed sample of milk is put in a container, and to that is added some ether as well as some other chemicals. Then the sample is put in a centrifuge and revolved for a few minutes. The ether dissolves the butterfat and then is poured off into a dish which is put in the oven, and treated in the same way as was the milk. The per cent of the butterfat is then calculated. This machine enables manufacturers to come very close to the percentage required by law and thus effect a great saving in the margin. It is said to be especially efficient when used with evaporated or condensed milk.

Robert's Night

The March Assembly, held in Robert's Assembly on the evening of Thursday, March 15, was given over to commemoration of Isaac Phillips Roberts, the first Dean of the College of Agriculture. Acting Dean A. R. Mann read a telegram of greeting from Professor Roberts and Professors J. H. Comstock, J. L. Stone, and G. W. Cavanaugh gave five minute talks consisting mainly of personal anecdotes of the Pioneer Dean. Professor J. E. Rice concluded the program with an illustrated talk on the early days of the College. Five hundred persons attended and at the end of the program adopted a Greeting to be sent by night letter to Professor Roberts, now residing in California.

A full account of the meeting will be published in the May issue of *The Countryman*.

The Department of Dairy Industry has reorganized its work in connection with the milk supply of the Department. Heretofore the Department has operated six receiving stations at which the farmers delivered their milk and cream. Arrangements have now been made to operate on central station and collect the milk and cream at the farmer's door by a system of collection routes. It is believed that this new system will prove more satisfactory to the farmer since it relieves him of the annoyance of delivering his own milk to the receiving station and will also prove more economical for the Dairy Department.

Major-General George W. Goethals, known as the "builder of the Panama Canal," spoke before some 3,000 students in Bailey Hall on Monday, March 5. His subject was "The Constructive Features of The Panama Canal."

Professor D. R. Crosby of the Extension Department spoke before the Annual Conference of the Agricultural Expositon Workers of the Northeastern States at Boston on March 1. His topic was "The Extension Man and His Job."

Dr. S. A. Munford has resigned his medical advisorship in order to accept a position in the Clifton Springs Sanatorium.

Paul Work, of the Department of Vegetable Gardening, has been in Canastota, helping the people there to organize a Coöperative Association.

B. W. Shaper, instructor in extension teaching for three years, has accepted the position of assistant director of extension service at Massachusetts College of Agriculture, at Amherst. He began his new duties on March 1.

Mr. E. F. Hopkins, Instructor in Plant Pathology, is spending this semester in graduate study at the University of Wisconsin.

The Official Dairy Instructors' Association of America will begin the publication of a bi-monthly journal devoted to the interests of the organization. Professor H. A. Frandsen, head of the dairying department at the University of Nebraska will be editor-in-chief. He has selected Professor W. A. Stocking, Jr., to edit the bacteriological division and Professor E. S. Guthrie to edit the butter division of the publication.

Truman W. Billings has accepted the position of assistant manager of the Chenango County Farm Bureau. He expects to move to Norwich the first of April. Up to the present he has devoted his time to the Dairyman's League and the Madison County Farm Bureau.

Dr. J. C. Bradley of the Department of Entomology will go next year to the University of California as Exchange Professor in Entomology. Dr. E. C. Van Dyke of that place will take the classes in Systematic Entomology at Cornell.

Prof. E. M. Tuttle of the Department of Rural Education went to Savannah, to speak before the Savannah Home and School Association on the work that his department is doing.

Professor W. M. Wheeler, head of the Entomology Department of Bussey Institute, Cambridge, Massachusetts, spoke before the Entomological Journal Club, Friday night, March 9. His topic was "A New Conception of the Meaning of Social Life Among Insects."

E. L. Kirkpatrick, Instructor in Vegetable Gardening, has just returned from Levanna, where he worked out methods of treatment for the soil, a heavy clay. He is planning a trip for this Spring vacation to Chicago, then

south, and homeward through New Jersey, where he will make a study of trucking conditions.

Professor A. A. Allen and six or seven others will travel through Central America this summer. The object of the trip is the study of birds and the party intends to bring back with it as many specimens as possible. In addition to the study of birds, each member of the expedition will devote time to the study of one other form of life; one taking reptiles, another insects, and so on. The expenses of the trip are being met by one of the group as a gift to the College.

The Experiment Station has ordered from the Michigan Limestone Company some limestone of various size, for experimental purposes. The limestone is ground to different sizes, one lot will go through a five mesh sieve and not through a ten; some between ten and twenty-five mesh; some between fifty and eighty; and some of a size that will go through a two hundred mesh sieve. Seven hundred pounds of each size has been ordered, in order to find out what size is the most economical to use.

Professor D. Lumsden of the Department of Floriculture, has just returned from a three months leave of absence, spent in Buffalo, where he studied orchidaceous and exotic plants at the Buffalo Botanical Gardens. These gardens honored Professor Lumsden by naming a new hybrid orchid after him. The plant belongs to the genus *Cypripedium*; its parents are *C. villosum* and *Spicerianum*. It will be known as the *C. Lumsdeni*. While at Buffalo Professor Lumsden gave a lecture on "Roses and Rose Gardens," which dealt with the propagation of the rose by different methods and advocated that more interest be taken in roses.

Recently there was a bad leak in a four inch gas main in the carnation house. Several thousand carnation

blossoms, sweet pea blossoms, and some rare orchids were killed. The loss was about two thousand dollars.

Prof. D. J. Crosby, head of the extension department, is now looking into possibilities of doing Extension work for Jewish farmers with Mr. J. W. Pincus in the eastern and the southeastern parts of the state.

At the meeting of the New York State Grange at Oneonta February 6 to 9, 1917, the Committee on Coöperation and Trade recommended that a stock company be organized under the supervision of the Executive Committee of the State Grange for the furtherance of coöperation in buying and selling for members of the grange. The grange voted to defer action on this motion and to refer the question of the advisability and feasibility of establishing such a stock company to a special committee of three to report at the next annual meeting. The committee consists of Professor H. H. Wing, of the State College of Agriculture, Mr. E. C. Gillette, of Penn Yan, and J. W. Scott of Copake. It is understood that, should this committee find that the plan seems to be feasible, it will report on ways and means of carrying out the recommendation of the Committee on Coöperation and Trade.

On the evening of Wednesday, March 7, the student and faculty committees of the 1917 *Kermis* met in the *Countryman* Building and considered plans for the *Kermis* of 1918. A new plan will be tried next year. Instead of the series of shows by departmental clubs, the clubs will be asked to submit short stunts and the best of these will go to make up the first part of the program. The second part of the program will consist of an original play or pageant written by a student of the College and depicting some phase of its work and ideals. A cash prize will be awarded the winner. A committee of faculty members and students is now at work on the details of

the contest and complete information will be given out next month.

Dr. F. E. Blodgett, of the Department of Plant Pathology, is also in Porto Rico engaged in private investigation of the possibilities of dusting for the control of citrus disease. Dr. Blodgett expects to return in two months.

C. T. Gregory, Assistant Professor of Plant Pathology, has been granted a four months leave of absence by the College. He is now working on the rust survey in the west under Mr. M. A. Carleton of the Government Bureau of Cereal Investigation.

Professor Gregory's place is being filled by Mr. R. D. Rands of the University of Wisconsin. Mr. Rands is assisting in Course 2 and has been here since March 1.

The Third National Conference of the American Game Protective Association was held March 13 and 14 at the Waldorf Astoria. The afternoon session of the 14 was opened by Dr. James G. Needham who spoke on "Technical Schools and Their Relation to the Advancement of the Sciences of Wild Life Conservation."

Professor J. C. Bradley together with a party consisting of Dr. and Mrs. A. H. Wright, Professor M. W. Wheeler of Harvard, Professor A. H. Morgan of Mt. Holyoke, Dr. Baecquaert of the College of Ghent, Messrs. H. H. Knight, Paul Needham and R. C. Shannon, is planning to spend the summer in California. The time will be spent mainly in collecting specimens of entomological interest in the desert regions of the south-western part of the state.

Professor L. R. Hessler of the Department of Plant Pathology is now located at the Federal Experiment Station in Porto Rico. Professor Hessler is carry-

(Continued on page 604)

FORMER STUDENT NOTES



Morgan

The Alumni Association Meets

The eighth annual meeting of the Alumni Association of the New York State College of Agriculture was held, Wednesday of Farmers' Week, Feb. 14. The Meeting amended the constitution so that the name Students' Association was changed to Alumni Association. The old name did not indicate clearly the character of the membership and has long misled outsiders and sometimes members. As heretofore, anyone who has ever been a student at the College of Agriculture is eligible to membership. Members of the staff are eligible but undergraduates are no longer eligible.

Previous to the business meeting Acting Dean A. R. Mann presented in a brief yet comprehensive way the state of affairs at the College.

The following officers have been elected for the ensuing year: President—E. L. D.

Elected President Ag. Alumni Association



E. L. D. Seymour, '09

Seymour, Garden City. Vice-Presidents—H. B. Winters, Albany; F. H. Richards, Bernardsville, N. J.; H. B. Knapp, Cobleskill. Secretary-Treasurer—F. W. Lathrop, Cobleskill. Executive Committee—Samuel Fraser, Genesee; I. C. H. Cook, South Byron; C. S. Wilson, Albany.

The financial report showed that the remainder of the debt incurred several years ago was approximately \$400 at the beginning of the year. During the past year a committee was asked to cooperate in reducing the debt

in order that the Association might be free to grow and develop in its usefulness to the College of Agriculture. The work of the committee, the work of the

other members during Farmers' Week and the balance from dues have reduced the debt to \$100. Several members are still working to completely pay off this remainder. We hope that the former students who read this report will aid us to this end. Many former students have aided generously because they feel that each former student owes a debt to the College of Agriculture. There is no reason to believe that the Association will ever be in debt after this balance is paid, since it will be self supporting. If you can, send your contribution; at any rate send your 1917 dues of \$1.00 to the Secretary at Cobleskill.

A good number of former students and faculty members attended the informal banquet held the same evening in the auditorium of the Home Economics Building. This event is destined to grow in popularity until it is among the most important events of the week. Professor J. E. Rice presided as toastmaster and introduced Dean Mann as principal speaker and many other former students and faculty members. Former Dean L. H. Bailey sent an inspiring letter which was read.

The Association adopted the following resolution:

Whereas the all-wise Providence has seen fit to remove from our Association and labors the following members: M. F. Webster, of Victor, N. Y.; C. D. Smith, of Trumansburg, N. Y.; and W. R. Lazenby, of Columbus, Ohio—we, the representatives of the Alumni Association desire at this time to express our sincere regret at the loss of our beloved members who were so closely connected with all the interests of the College of Agriculture and the Alumni Association: Therefore be it

Resolved, that the Secretary of the Alumni Association be instructed to send a copy of this resolution to the wives and families of the deceased, and that a copy be spread on the minutes of the Association.

We, the members of the Alumni Association, are delighted to learn of the efficient and harmonious administration enjoyed by the College of Agriculture under our fellow member, Acting Dean Albert R. Mann: Therefore be it

Resolved, that we hereby express to

him our entire confidence in his work and our appreciation of his untiring efforts in serving the College of Agriculture as Dean.

The Committee on Resolutions submitted the following resolutions:

Knowing how the work of the College is crippled this year, owing to the reduction in the support received from the State, it is

Resolved, That this Association considers this reduction most unfortunate and calls upon the State Legislature to make adequate provision for the needs of the College, and it urges its members to make strong representation to their senators and assemblymen regarding the same.

F. W. Lathrop, Secretary.

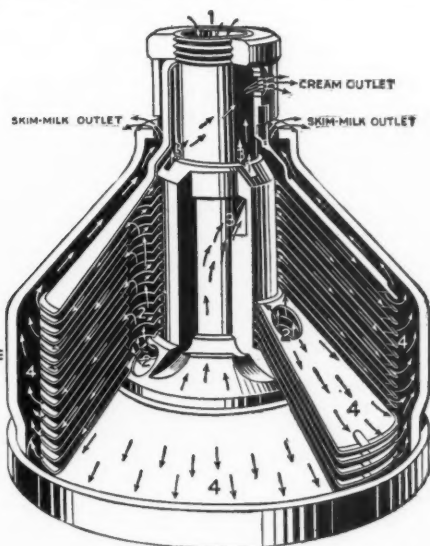
'02, W. C.—Warren H. Langworthy is farming as part of the firm of Lamb & Langworthy at East Hamilton. They are chiefly in the dairy business, having a herd of 85 Holsteins of good pedigree and production. Many of the best are grand-daughters of "King of the Pontiacs," having been sired by "King Pontiac Canary." Four cows have records of over 30 pounds of butter in 7 days. The crops raised to some extent are peas, cabbage and potatoes.

'02, Sp.—D. W. McLaury lives on River Meadow Farm Number 9 at Milford. He has been manager of River Meadow Farm since 1904. He has also been superintendent of cattle at the New York State fairs since 1908 and was General Superintendent of the National Dairy Show in 1916.

'06, W. C.—C. G. Dutton and C. R. Owners, W. C., '09, who assisted in the cheese and butter laboratories have returned to their duties as inspectors for the State Department of Agriculture.

'06, B. S. A.—Edward M. Swiggett is engaged in agricultural science teaching, landscape architecture and park building and construction in Utica. The parks under his supervision require a varied application of agricultural and landscape art principles. Wild animals and birds are kept in considerable numbers on these preserves.

(Continued on page 584)



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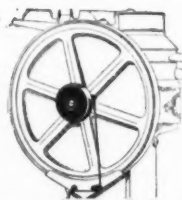
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Former Student Notes

(Continued from page 582)

'07, B. S.—Winfield Hale who describes his occupations since leaving Cornell as contracting, flying, farming, teaching, directing garden work and writing, has been struggling on 57 acres of desert near San Diego, California. His crops have been grapes, water melons, alfalfa and cotton, but have not been satisfactory. His poultry consisted of "one bantam hen who laid eggs in the sun and when we got them they were soft boiled." He had a Ford before he went broke, he states.

'07, Sp.—Arthur R. Loewe is teaching in the city schools of Milwaukee. In the summer he is associated with his father and brother in the Riverheights Nursery Co.

'07, B. S. A.—William J. Morse has been connected with the Office of Forage Crop Investigations, Bureau of Plant Industry, U. S. Department of Agriculture since 1907.

'08, W. C.—Clara Helfer is working in Head's shirt factory in Ithaca. Her address is 306 West Seneca St.

'08, B. S.—Chester J. Hunn left on March first for a six weeks trip to the West Indies, in order to make a commercial agricultural investigation, principally of the Island of Haiti.

'08, B. S. A.—Vaughan MacCaughy is teaching in the College Hawaii, Honolulu. He is also doing research work in tropical biology.

'08, Sp.—L. F. Strickland is in charge of the work of the Bureau of Plant Industry in Niagara, Erie, Wyoming and Genesee Counties. As the work is largely horticultural, it centers chiefly in Niagara County and Mr. Strickland makes his home at Lockport. The duties of the position are diversified among the following heads: inspection of nursery stock; examination of shipments of nursery stock into the district;

apple grading, inspection and instruction; coöperative experimental work; instruction and demonstration in the control of injurious insects and diseases.

'09, B. S. A.—Edwin W. Mitchell is farming at Stuyvesant Falls. 150 acres are devoted to hay, and 100 are devoted to apples and pears.

'09, B. S. A.—Since leaving Cornell, F. E. Robertson has been teaching. He is connected with the Farms Management Department of the Department of Agriculture and also with the Farm Bureau. He may be addressed at Watertown.

'10, Sp.—Hans Kollandsrud is at present general manager of the East Hood River Fruit Company, at Mosier, Oregon. He has been occupied in horticultural work in that district since the fall of 1910, having been assistant manager of the company and provincial inspector of fruit pests in the Grand Forks District, before obtaining the present position. 180 acres of the 300 acre farm is set to fruit, chiefly apples but some pears, cherries and prunes. Hog raising in connection with fruit growing has been tried and found successful, with the aid of movable hog fences. They have installed an irrigation system of their own which is ample for all demands that are likely to be made upon it.

'10, B. S. A.—James H. Rutherford was in town during farmers' week. He is now with the Phoenix Mutual Life Insurance Company of Buffalo.

'11, W. G.—L. D. Conden is farming near Fredonia, on a 105 acre general farm. Besides grain, small crops and fruit, he has 20 head of pure bred Jerseys, a herd of pure bred Chester White swine and several pure bred Scotch Collies.

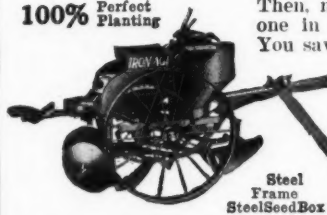
'12, B. S. A.—Eugene C. Auchter has been teaching and doing experimental work in horticulture at West Virginia College of Agriculture. He has been

(Continued on page 586)

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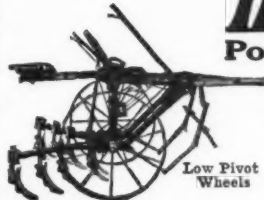
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Former Student Notes

(Continued from page 584)

carrying on experimental work in apple pruning, apple and peach thinning and fertilization, and apple pollination. He has written several articles on his specialty.

'12, B. S.—Earl T. Maxon is at present employed by the Bureau of Soils, U. S. Department of Agriculture, Washington, D. C. He is engaged in field work in the south during the winters and in New York State during the summer.

'12, W. C.—R. R. Stacey, head butter-maker at the College for the past two years has recently accepted a position as manager with the Richmond Co-operative Creamery Company of Richmond, Vermont. The vacancy left by his resignation is to be filled by C. A. Tarbell, '07, W. C.

'12, B. S. A.—Carl G. Wooster, who formerly operated a large fruit and dairy farm at Wolcott is now managing several large fruit and dairy farms owned by his father at Union Hill.

'13, B. S.—Roy C. Beach is engaged in running the Ithaca Sales and Pedigree Company, who are engaged in tabulating pedigrees of Guernseys and Holsteins and also the buying and selling of these breeds. His office is in connection with the Tioga County Farm Bureau.

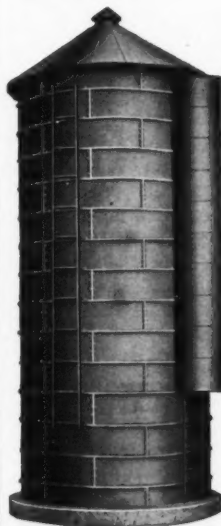
'13, B. S.—Jacob Reynolds has been farming on a 233 acre farm of his own near Plattsburg. The farm has been run by tenants for over thirty years and was in very poor condition when Reynolds took charge of it. He has been successful recently by practicing proper rotations of corn, potatoes, beans, buckwheat, and grass crops. In addition to these crops, he raises sheep and young cattle.

'13, B. S.—Charles D. Bennett is engaged in experimental and research

(Continued on page 588)

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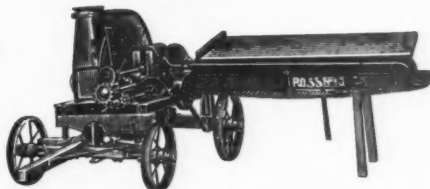


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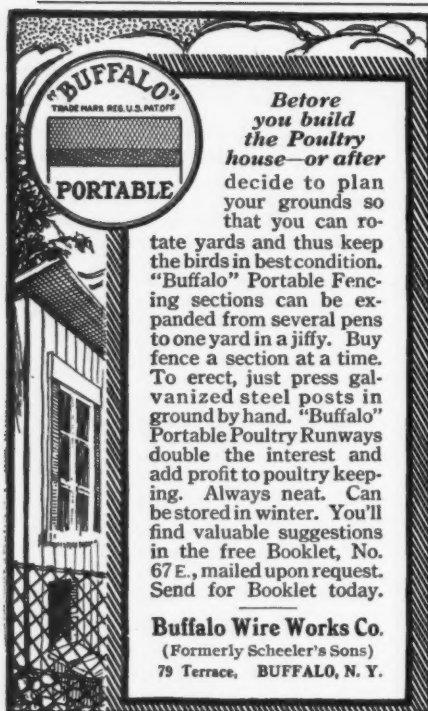
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Former Student Notes

(Continued from page 586)

work in the Office of Corn Investigation, Bureau of Plant Industry, Washington, D. C. He has been supervising experimental work in New York, New Jersey, Pennsylvania and the New England States.

'13, B. S.—Hermann W. Hagemann is farming at Cocoanut Grove, Dade County, Florida on a 50 acre farm with a 5 acre experimental plot in connection with it.

'13, B. S.—Clinton Raymond is teaching at Griegsville.

'13, B. S.—Oliver Smith was assistant agronomist, West Virginia Experiment Station during 1913 and 1914 and county agent and farmer at Talbot County, Maryland, during 1914 and 1915. He is now president of the Odorless Plant Food Company, Takoma Park, Washington, D. C., manufacturers of and dealers in odorless plant foods for lawns and gardens.

'13, B. S.—L. F. Whipple traveled for Sharples Separator Co., from 1913 to 1916 and has since been farming on a 180 acre farm, devoted chiefly to dairy products. He has 50 head of live stock, including a registered Ayrshire bull.

'14, B. S.—William Artman is now teaching science at LeRoy.

'14, B. S.—Edna Brush is teaching domestic science at North Guversdale, Conn.

'14, M. S. A.—A. J. Dadisman was formerly farm management investigator for the U. S. Department of Agriculture in West Virginia. He is now an associate professor of rural economics and farm management at University of West Virginia.

'14, B. S.—Lua A. Minns is teaching floriculture at Cornell. Her address is 307 East Avenue.

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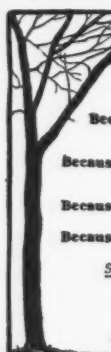


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use PLOWS some. Why not insist on the lightest draft and most satisfactory make. The **LE ROY** made by a strictly New York State independent Company.

Our Catalogue?

LE ROY PLOW CO.
Le Roy, N. Y.

Foliage, Wood and Wire Fences

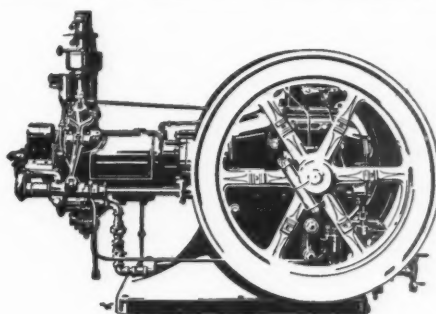
(Continued from page 562)

sulphate to 100 parts of water by weight; this proportion is sufficient to make a saturated solution with a specific gravity of 1.186. As there is a small per cent of acidity present it is necessary to add a quantity of copper oxide or copper carbonate to overcome this. Enough should be added so that there will be some that will not go in solution, which indicates that the acidity present has been neutralized. It is necessary to add one of these substances some time in advance of the time it is desired to make the test in order that the proper chemical reactions will have taken place and the acid will have been neutralized before the test is begun. It is considered that it will require a month for these compounds to act. The same result might be obtained by the addition of sodium carbonate; this would form a chemical reaction with the copper sulphate and copper carbonate would be precipitated down in the solution. However, if this is done, only a small quantity of sodium carbonate (a teaspoonful) should be added in order not to precipitate out enough copper from the solution to materially weaken it. At least a quart of the solution should be used when testing the wire. Before being immersed in the solution the wire tested should be cleaned by the use of some volatile oil, as gasoline.

The wire should be dipped in the solution and left for one minute, at the end of which time it should be removed and wiped perfectly dry. Repeat this operation until the wire shows a deposit of copper (a reddish color) after being wiped dry. If the wire stands three immersions before it shows a deposit of copper, it is a good grade.

If a strand of barbed wire is strung about four inches above a woven wire fence it will prolong the life of the woven wire, as it prevents horses from leaning against the fence when they are reaching over to get at a crop in an adjoining field.

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CHICAGO (Incorporated) U S A

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and Cold Water**Meals Modified A la Carte Plan**Club Breakfast Special Luncheon
Table d'Hote Dinners**J. A. & J. H. Causer, Props.**Langwell Hotel, Elmira, N. Y. under same
management.

Indications of Laying Capacity

(Continued from page 567)

Sixth Step.

Use for breeders only those birds which have a leg band or leg bands on each shank and which also *show, by their physical appearance as well as by their records, that they are vigorous, virile, i. e. long distance, high record performers.* Use only hens for breeders, i. e. when they have laid about a year and a half or more (when they are approximately two years old), thus securing the factor of longevity and high fecundity at the same time, with the understanding that without the former the latter would be of little or no avail. A failure to recognize this fact has apparently been the cause of great expense and grievous disappointment and failure on the part of many breeders.

Seventh Step.

Mate to the hens those selected males whose mothers, and, if possible, whose grandmother and great-grandmother were similar, as regards laying capacity, to those birds to which he is mated and that also possess striking physical characters indicating superior size, vigor, gallantry and observed mating powers, and preferably, also, a two or three year old male rather than a cockerel.

Eighth Step.

In so far as it is feasible to keep such records as would enable the breeder to ascertain the breeding qualities of individual males and females by a system of pedigree hatching in order to ascertain the difference in the prepotent powers of the individuals of each sex with the expectation that very few if any of these, either male or female, would be found to possess the power to transmit either high or low fecundity character to all of their offspring but that some individuals, either male or female, in the flock, would possess greater powers than others of producing high producers or individuals capable of transmitting the fecundity character to their offspring. The progeny testing for propotency of both males and females while desirable, is not within the reach of many breeds under existing conditions. The progeny testing of the males, though easier of accomplishment, is not practicable in a great majority of instances on account of the extra expense involved in pedigreeing and record keeping and the necessity of retaining all of the males and females used as

(Continued on page 596)

2 More Quarts Of Milk From Each Cow

Hundreds of dairymen report a gain of two quarts of milk per day from each cow because they use International Special Dairy Feed. Figure out what this would mean from your herd. And remember that International Special Dairy Feed costs less to feed than home-grown grains. There is not a single month of the year when

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cannot be fed with profit. It is an ideal all-year-'round ready grain ration. Milk Means Money. More milk means more money for you. And the surest way of getting the most milk at the lowest cost is to feed your herd International Special Dairy Feed. Some of the country's foremost dairymen have proved this to be a fact.

Go to Your Dealer. Try one ton—the result will be so good you will never again be without International Special Dairy Feed. Be sure you get International.

Manufactured Only By

International Sugar Feed Company

Minneapolis, Minn. Mills At Minneapolis & Memphis

100% Value from Your Corn Crop

Join the country-wide money-making movement, "A Silo on Every Farm." Add 40% to the value of your corn crop; cut down your feed bills; and increase your milk and beef sales. Erect a Natco. The stock will eat every scrap of silage and look for more.

Natco Imperishable Silo

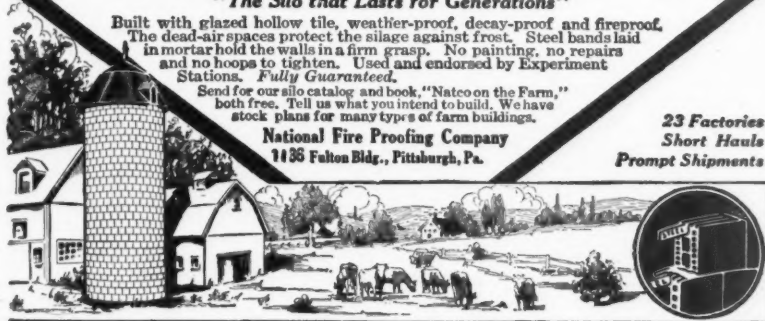
"The Silo that Lasts for Generations"

Built with glazed hollow tile, weather-proof, decay-proof and fireproof. The dead-air spaces protect the silage against frost. Steel bands laid in mortar hold the walls in a firm grasp. No painting, no repairs and no hoops to tighten. Used and endorsed by Experiment Stations. Fully Guaranteed.

Send for our silo catalog and book, "Natco on the Farm," both free. Tell us what you intend to build. We have stock plans for many types of farm buildings.

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It is steam-cooked and no trouble to prepare or use.

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It gives that beautiful golden June shade and does not affect, in the least degree, the aroma or flavor of the butter.

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Dairyman's Cleaner and Cleanser

represents an idea worked out along scientific principles, and it is backed with the knowledge that certain materials in certain proportions will accomplish the results desired in dairy, creamery and cheese factory cleaning.

Time and time again Wyandotte Dairyman's Cleaner and Cleanser has demonstrated that it not only produces better cleaning results, but better results with less labor, less time and less expense for material.

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In Every Package

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Sole Manufacturers, WYANDOTTE, Mich., U. S. A.

This Cleaner has been awarded the highest prize wherever exhibited

IT CLEANS CLEAN

Where you saw it will help you, them and us

PAGE'S SEED CORN GROWS

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MAY 26th

SPRING DAY CIRCUS
10:00 A. M.

YALE BASEBALL GAME
1:45 P. M.

PRINCETON CREW RACE
5:00 P. M.

The Laying Capacity of Fowls

(Continued from page 592)

breeders until their progeny can be tested for production, which entails a large and usually a prohibitive expense. To the breeder who goes on the assumption that by mating together his best males and best females as suggested above, there is a reasonable expectation that he will, each year, see a gradual increase in the productive capacity of his fowls which will abundantly justify the extra care and thought devoted to his breeding problem.

Agricultural Mobilization

(Continued from page 565)

retail prices of white cabbages and turnips, green cabbage and kale, savory and red cabbage, carrots and onions. And on the next day of carp, tench, pike, red-eyes and fin-scales.

She counted her brooks, rivers, ponds and lakes and safeguarded their schools of fish. She granted liberal aid to her rural coöperative societies. She organized her supply of steam plows, motor plows, reapers, scythes, sickles and spades, and supervised their effective distribution, exchange and use. Nothing was left to chance; she superseded the law of supply and demand. Notwithstanding these precautions the food problem in Germany is undoubtedly serious. But one of the most amazing facts of the war is that in spite of the blockade and the fact that in normal times Germany raises only four-fifths of the food she consumes, potatoes, bread and even meat are cheaper in Germany today than they are in England or the United States.

Under the shadow of war it is imperative that the nation's best intelligence should be directed to the equipment of the army and navy through industrial mobilization. But if war comes, our most effective contribution to a decisive peace will be to supply food at reasonable cost and in increasing quantities to our own people and to the Allies. Agriculture, in war as in peace, is at the basis of national security.

In writing to advertisers please mention The Cornell Countryman

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Convenient to Theatre and Fashionable
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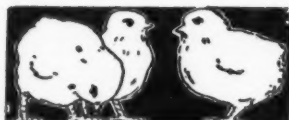
Rooms, private bath, \$2.50 and up

ASK FOR BOOKLET

E. C. OWEN, Manager



Showing the Hotel Powhatan upon the completion of its new addition



Moist grain--- means musty feed

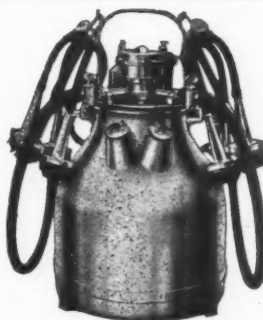
The steam-cooking which we give our feed reduces the moisture in the grain. And so it will keep sweet and clean.

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A balanced combination of cut oatmeal and other selected grains—cut to pinpoint fineness and steam-cooked for easy digestion. Write for free sample, prices and descriptive folder.

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One Horse Is Enough

No need to lose dollars these days by incomplete tillage. If you have one horse—that is enough! You can do as good work as the big outfits on the largest farms, when you use one of the several types of light draft, 1-horse sizes of the

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CLARK

Disk Harrows

Disks, cutlery steel forged sharp; reversible gangs; dust-proof, oil-soaked hardwood bearings are a few of its features. If your dealer has not the genuine CUTAWAY, write direct. Send for free book "The Soil and Its Tillage," and for special folder illustrating one-horse implements.

The Cutaway Harrow Company
Maker of the original CLARK
disk harrows and plows
2016 Main Street, Higganum
Conn.



Special Crop Soils

(Continued from page 571)

handled parts of these soils. Grass stands longest on them. For beets they are good but for early vegetables and potatoes they are totally unsuited. Corn can be made to give a good yield. Humus is relatively easy to maintain since in these cool, poorly drained soils it decays slowly. In all the areas lime is abundant in the subsoil but likely to be deficient in the topsoil.

Drainage is the first key to its improvement and with the maintenance of the organic matter and careful tillage, good crops can be secured without much fertilizers. Prices of such land are relatively low. It is hard to work but responds well to good management.

Few states have the diversity of soil and climate that New York presents. As years go on we may expect to see developed an intricate pattern of crop adjustments suited to the varying farm and market conditions. The potential crop producing capacity of the state is tremendous and only awaits prices that will justify the expense. The only safe course is to make every acre of land pay for its own development. Development of waste land—whether it be swamp land or desert land—at the expense of the state as is sometimes advocated, is unwise. It encourages over-production and puts a handicap on the man who has developed his own land. It is unsound economic practice.

By means of the soil survey and the survey of plant-food supply of the lands of the state, we are determining the kinds, character and location of the soils and are laying the foundation for their wise development. This is the stock taking process. Like the farm inventory it is a necessary step but by no means the sum of soil study. Much field and laboratory study and experimentation and demonstration on farms will be necessary in the process.

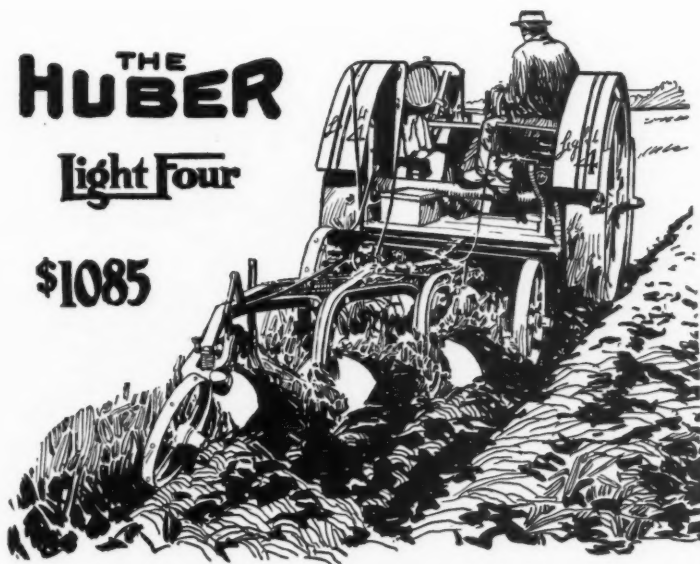
A map showing these regions of special crop soils was received too late for publication.—Ed.

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ACRE for acre—hour for hour,—the Huber Light Four challenges competition for economical work. Under reasonable conditions pulling three 14" plows, set 8 inches deep, it easily turns an acre an hour on a gallon and a half to two gallons of gasoline. In the 5,000 lb. class. It does not pack the ground. Never stalls.

Steers itself when plowing. And such power! A steady stream of energy from a 4-cylinder motor, transmitted direct to the drive. Does not over-heat in extreme weather. Self-lubricating anti-friction bearings. It turns in a six-foot radius and is mounted on its powerful frame so as to adjust itself to the roughest fields.

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Your real safeguard is in buying

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They both give full satisfaction. They are farm helps not hindrances. When you start using a piece of new Columbian Rope, you know absolutely that it will not fail you at a critical moment, and when you put a ball of Columbian Binder Twine in the can—you put all your attention to the operation of the machine—you'll have no delays with the twine breaking.

Be sure to order Columbian Rope and Binder Twine this year—your dealer should get it for you.

Send for our Prosperity Map of the United States, the most unique map for the schoolroom or home you ever saw.

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Genesee Street,
Auburn, "The Cordage City" N. Y.
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Mediaeval Women as Wage-Earning Farm Hands

(Continued from page 573)

pots and a jug or two, a basin used apparently for washing hands, besides a few dishes of slender construction. Some of these items appear in most inventories of humble cottages. The copper and brass utensils were sold by weight generally, and quoted as in 1366, "a 4 gal. pot at 30 cents the gallon, a posnet holding 1 gallon at 40 cents."

All these items give a fairly good idea of the real wages of women before 1400. As prices of labor rose, adding to their nominal wage, their buying power did not increase, for other prices rose for all sorts of household supplies.

By 1490 the peasants, as would-be purchasers, met the following prices:

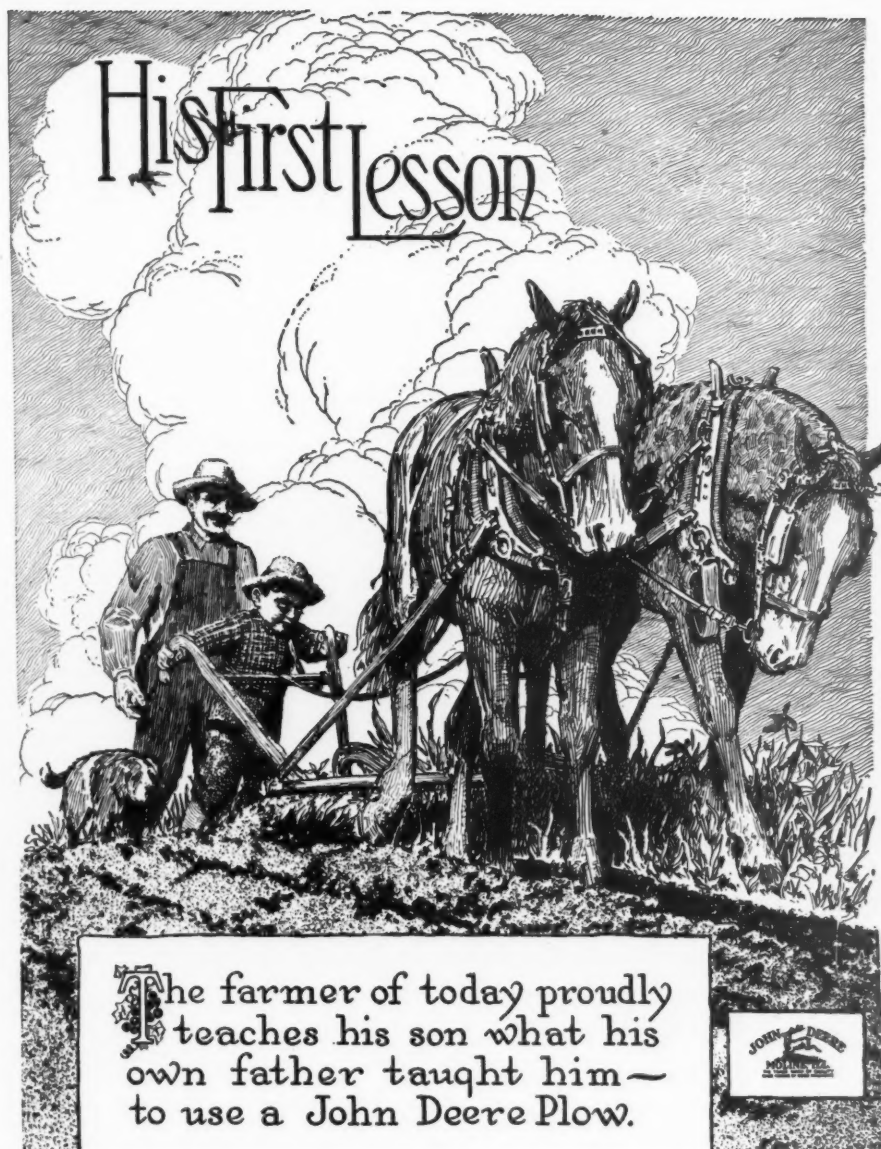
	Cents
2 leather buckets	12
1 kitchen axe	20
10 bunches onions	32
9 shovels	64
frying pan	80
brass pot for kitchen	84
2 kitchen knives	24
1 padlock	8
lantern	24
shoes	8
wheel barrow	28

As a new saddle, bit, reins, and head piece cost about \$5.75, the villeins must have been forced to make the harnesses of rawhide or home-tanned leather, and been content, as they doubtless bade their wives be, with what they could afford.

Women, however, were even in the 14th century spinning and weaving extra wool and linen for sale to merchants who came by the crossroads near their manor villages—perchance on the way to or from a fair. Sometimes the bailiff on the estate bought for the "big house" all the linen the villeins' wives could weave. Gradually the possibilities of wage earning on farms found competitors in indoor industries. Women could choose between extra work at their spinning wheel or loom and in the field, sowing the seed of the later domestic system

(Continued on page 602)

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His first lesson
 The farmer of today proudly
 teaches his son what his
 own father taught him—
 to use a John Deere Plow.

FELLOWS:

Ordinarily a farm implement doesn't furnish a theme for sentiment—it usually suggests hard work.

But back home there is, in all probability, an old John Deere plow which your grandpap, dad and perhaps you yourself have followed down many a long furrow—and it will be treasured all the more as the years go by.

Each implement bearing the John Deere trade mark—and there's a John Deere implement for every kind of work on the farm—has incor-

porated in its makeup the same qualities that made your granddad swear by that old John Deere plow.

You may be thinking of getting some new implements when you have finished school—you'll at least want to be in a position to recommend the best and latest in farm machinery. We'll be pleased to send you literature describing any special tool you are interested in, if you'll write.

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Both Phones

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Gets 'Em**



Stover Printing Co.

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Mediaeval Women as Wage-Earning Farm Hands

(Continued from page 600)

which in the 16th to early 18th centuries kept thousands of country women busy on piece work in their homes. Besides the growth of foreign markets and the expansion of the crafts, until they demanded and attracted more women as textile workers, another big movement was on foot in England at the close of the Mediaeval period. The exigencies of the century following the Black Death and the resulting scarcity of labor, made agriculture less profitable and harder to manage even with the repeated efforts of Parliament to remedy affairs by legislation.* Gradually grazing took the place of agriculture as the main occupation on the manor lands; sheep runs were made out of the old farm lands, and one shepherd worked where formerly scores of farm laborers had earned their livelihood. Only the crofts and a share in the much curtailed common pastures were left to the old peasant residents of many manor villages.

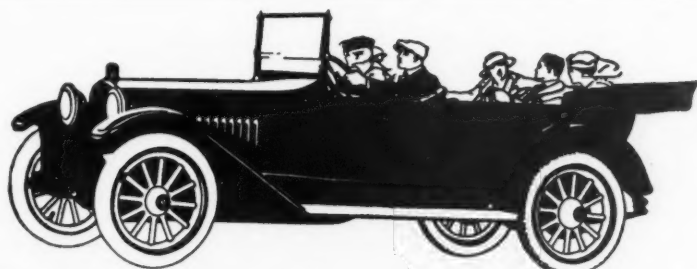
*Limits of farm wages for women by the bill introduced in Parliament in 1444 were for "a woman servant \$2.40 and clothing price of 96 cents, with meat and drink; a child within age of 14 years, \$1.44 and clothing price of 72 cents with food."

DOMECON NOTES

The Annual Conference of the State and County of Home Economics Workers for ten of the northeastern states, including New York state, met at Boston, Mass., March 1 and 2. Miss Van Rensselaer spoke on "State Wide Projects 1916-17" and later on "Home Demonstration Projects" and "Discussion of Projects with a Lesson in Project Making." She was also on the Committee which gave a summary of the day's program with recommendations.

On the evening of March 8th, a mass meeting of the women students was held in Barnes Hall at 7:30. Dr. Matzke, the women's adviser, and President J. G. Schurman spoke.

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Campus Notes

(Continued from page 580)

ing on investigations in the citrus disease and will be gone about four months.

The following Cornell men spoke at Albion on "Farmers' Days," which ran from March 13-15: Prof. M. F. Barrus, Mr. H. C. Bottsford, Prof. D. J. Crosby, Prof. G. W. Cavanaugh, Prof. B. B. Robb, Mr. W. G. Krum, Mr. R. Matheson and Prof. R. W. Rees.

The Department of Rural Engineering is at work on a map which should be of great use to the College of Agriculture. It includes all the land owned and operated by the College. When the outline is made it will be submitted to the various departments for corrections and additions of such features as are of special interest to them, such as roads, barns, fields and experiment plots. It will be made in two forms; first as an outline map, and later as a topographical map including contours at five foot intervals.

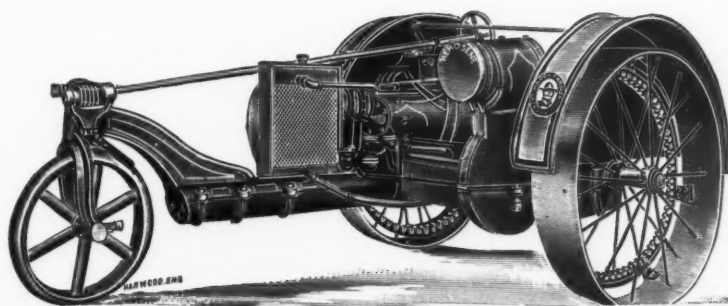
Mr. P. W. Claassen, assistant in Biology during 1915 and '16, and a graduate in Entomology, has accepted the position of assistant professor of Entomology at the University of Kansas. He will complete his term of residence here sometime during the summer.

Messrs. C. A. Owen and D. C. Dutton of the Department of Dairy Industry Winter Course instructors have left to take up work under the New York State Department of Agriculture.

Miss Anna Stryke has resigned her position in Entomology and will spend the coming year in California. She is to be married.

W. H. Brittain, Provincial Entomologist of Nova Scotia, spent the months of March and April in special research work in Entomology at Cornell.

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EVERY pound in weight on a La Crosse Happy Farmer Tractor is put where it counts in pounds pull. Here is an unbeatable combination of highest grade materials in a simple practical design. Only two-thirds of the parts used in other tractors; The ideal light-weight tractor—a powerful motor—mounted on a one-piece, unbreakable cast steel frame with 88 per cent of the weight on two drive wheels. Self-steering. Will do all the belt work on the farm.

LA CROSSE HAPPY FARMER TRACTOR

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Model "B," 12-24 h. p., our wonderful kerosene burner. Most perfect twin cylinder motor. All parts easily accessible. Guaranteed draw-bar pull 2000 lbs or three 14

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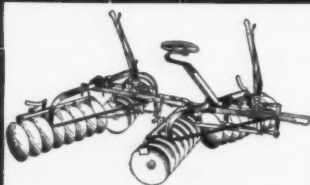
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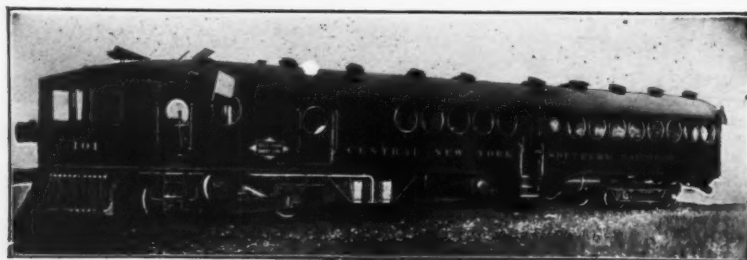
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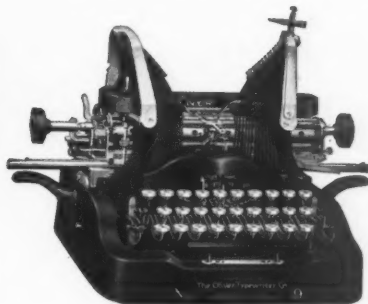
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There is truly no other typewriter on earth like this new Oliver "9." Think of touch so light that the tread of a kitten will run the keys!

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The new-day advances that come alone on this machine are all controlled by Oliver. Even our own previous models—famous in their day—never had the Optional Duplex Shift.

It puts the whole control of 84 letters and characters in the little fingers of the right and left hands. And it lets you write them all with only 28 keys, the least to operate of any standard typewriter made.

Thus writers of all other machines can immediately run the Oliver Number "9" with more speed and greater ease.

WARNING!

This brilliant new Oliver comes at the *old-time price*. It costs no more than lesser makes—now out-of-date when compared with this discovery.

For while the Oliver's splendid new features are costly—we have equalized the added expense to us by simplifying construction.

Resolve right now to see this great achievement before you spend a dollar for any typewriter. If you are using some other make you will want to see how much more this one does.

If you are using an Oliver, it naturally follows that you want the finest model.

17 CENTS A DAY! Remember this brand-new Oliver "9" is the greatest value ever given in a typewriter. It has all our previous special inventions—visible writing, automatic spacer, 6½-ounce touch—*plus the Optional Duplex Shift. Selective Color Attachment* and all these other new-day features.

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TODAY—Write For Full Details! and be among the first to know about this marvel of writing machines. See why typists, employers, and individuals everywhere are flocking to the Oliver. Just mail a postal at once. No obligation. It's a pleasure for us to tell you about it.

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Where you saw it will help you, them and us

Postal Life N.Y.

Let the Postal Solve Your Life-Insurance Problem



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Pach Bros.
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CLEVELAND

Get a policy, and then hold on to it. It means self-respect, it means that nobody will have to put something in a hat for you or your dependent ones if you should be snatched away from them.

Service

Your decision as to which policy is best will not take long if you go about it in the right way—the direct way—as made possible for you by the Postal Life Insurance Company.

It sends no agent to bother you, but it forwards by mail full official information regarding any standard policy-form.

The Company will also send you on approval the policy itself, so that you can see just what you will get, and when you are once a policyholder it will continue to be at your service for consultation and advice—personally or by letter—which also includes the service of the Company's Health Bureau for policyholders.

Deciding upon the kind of life insurance policy to take out, like the purchasing of a home, whose permanent maintenance that policy makes certain, should not be a hasty matter; it is most important.

You cannot resolve too quickly that you will take out some kind of a policy. Read what four distinguished Americans say, but consider carefully just what kind will best meet your needs.

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Besides service you will find net cost low in the Postal because you get the benefit of the agent's first-year commission—a substantial saving guaranteed in your policy.

In subsequent years you get the agent's renewal commission, namely 7½%, and you also receive an office-expense saving of 2%, making up the

Annual Dividend of

9½%

Guaranteed in the Policy

Beginning at the close of the second year the Postal pays contingent dividends besides, depending on earnings, and it also does away with numerous branch offices and various unnecessary State requirements, thus making additional savings.

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It will pay you to write to-day for the Company's Official Booklet, "SOUND INSURANCE PROTECTION AT LOW NET COST" also official figures for your own age,

on any form of policy—Whole-Life, Limited-Payment Life, Endowment, Joint-Life, Child's Welfare, or on a Monthly-Income Policy.

The Postal issues all the standard forms and all these are approved by the strict New York State Insurance Department.

Just write and say:

"Mail official insurance particulars as per The Cornell Countryman for April, 1917

And to find out how much you save, be sure to give:

1 Your full name. 2 Your occupation. 3 The exact date of your birth

No agent will be sent to visit you. Commission-savings thus resulting go to you because you deal direct.

POSTAL LIFE INSURANCE COMPANY

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If a man is dependent upon a salary or income which will terminate with his life, it is peculiarly incumbent upon him to insure that life for the benefit of his wife and children.

Safety

The Postal is safe because it sets aside the full reserves required by law and necessary for the payment of all policy claims, now and in the future.

In addition to this legal reserve—now more than \$9,000,000, invested in interest-bearing securities, the Postal carries a surplus and has ample funds at interest in leading banks, and a special deposit of \$100,000 with the State of New York, where the Company is chartered.

Though only ten years old, it now pays—and promptly—more than a million dollars a year to beneficiaries throughout the Union and elsewhere, under policies issued through the Company's direct non-agency method of doing business and under those assumed in its reinsurances.



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TAFT

A man in office without means must abandon the hope of making the future luxuriously comfortable. All a man can do under existing circumstances to safeguard his family is to get his life insured.



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WILSON

If a man does not provide for his children, if he does not provide for all those dependent upon him, then he has not opened his eyes to any adequate conception of human life.



A Tractor on the New York State Farm? Why?

because it has proven over and over again its adaptability to farms in this State, because it takes the place to a very large extent of the almost unobtainable hired man, because it does the work of from 6 to 10 horses and does not require to be fed high priced feeds in between, and because it can be driven all the time and not be stopped for a rest. One of the main reasons why the farmer must use more machinery is because he has the biggest job on his hands that he has ever faced—the feeding of the world—and is at the same time facing a serious shortage of labor. The munitions and other factories are steadily draining the rural communities of their labor supply,—and yet the country and the world must be fed. With over half the world fighting, and a large part of the other half manufacturing war munitions, the American farmer certainly has a job that will try his mettle and ingenuity as well. And he must, of necessity, use labor saving machinery to the fullest possible extent.

But the progressive farmer does not need to be told this—he knows it! With him, it is not a question “Shall I buy a tractor,” but “What tractor shall I buy.” The Cornell Countryman believes that there is room for more coöperation between the tractor manufacturer and the farmer; the farmers are, at best, poorly advised regarding the relative merits of the different tractors. In fact, as one prominent farmer remarked, “We can find out the bad points of nearly every other tractor than the one the salesman is trying to sell us but very few of their good points.”

The tractor has come to stay in New York State but New York State is by no means homogeneous flat land. The conditions in no two communities are alike, and a tractor adaptable to one community may not be to another. Let's get together and see if we can't solve the problem by better publicity, less knocking and more boosting, and honest service.

"PRE-PAR-ED-NESS" is the word

Not alone for the patriotic, loyal American people who want PEACE—not a piece of peace—but it applies just now to the wide awake, progressive, successful Fruit Grower who must soon



meet his enemy, the Bug. REX Lime and Sulphur Solution and REX Arsenate of Lead pumped through a Gifford 6 in 1 Any Angle Nozzle will batter down his defenses and build up good trees. Enlist at once. Mail your specifications to headquarters.

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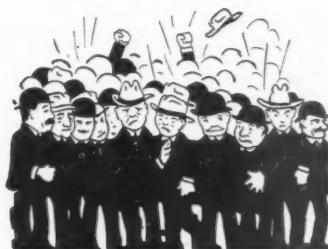
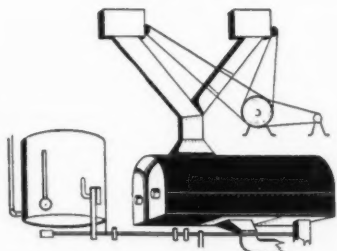
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One machine does the work of 100 Men

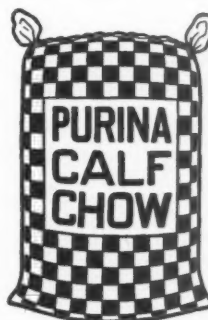
It no longer pays to mix feed on the barn floor when you can buy scientifically prepared feeds.

Purina checkerboard bag rations are made just about as you would make them. The formulas are in keeping with the most advanced scientific knowledge.

Let us send you more information about Purina Calf Chow. The mother's milk substitute that saves several dollars a calf over the cost of milk feeding.

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WELL SERVED**

The Ancients Never Ate in the

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Now Look at Them They Are All Dead

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319 College Ave.

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WITH THE ADVERTISERS

Progressive Farmers

Recently a prominent professor at Cornell undertook a very extensive and carefully conducted survey of the college trained farmers in New York State. His conclusions, based on cold, hard facts, are certainly gratifying to those who are working for higher practical education for farmers, for he finds that the college trained farmer is making a labor income 150% higher than that of the average farmer.

The Cornell Countryman has recently inaugurated a survey of its subscribers, composed almost entirely of college trained farmers, and the results from the first forty sheets to come in certainly bear out the conclusions of the Cornell professor. Among these forty farmers, thirty-one of them own automobiles, thirty of them have septic tanks, twenty-eight of them have up-to-date water systems, twenty-seven of them have electric lighting systems, five of them have tractors and three of them have milking machines.

But one conclusion can be drawn from these figures: the college man has learned to appreciate the better things in life. He is striving to improve his home life as well as to increase his crops, and he is securing the wherewithal by virtue of his superior training. The end of all training must be to improve one's position in life, and it certainly seems that agricultural training is doing its share!

Home Mixing vs. Manufactured Feeds

It is probable that no industry in the country has, during the past, received so little attention in regard to economical management of time and labor as has farming. And there can be no doubt that this lack of careful planning and management has been the cause of exceedingly small profits or even losses in the farming industry.

But the scarcity of farm labor is mak-

(Continued on page 616)

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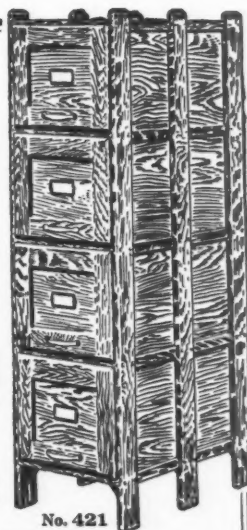
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This Solid Oak Letter File provides quickly accessible filing space for 20000 Letter Size Papers or equivalent of Clippings, Orders, Tariffs, Etc. Practically wear-proof. Each frame joint interlocked, glued and held with two screws. Drawers roll easily on Roller Bearings

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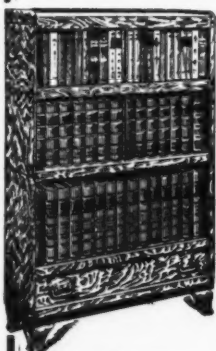


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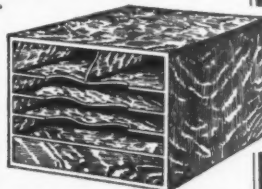


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For Cap, Letter and Note Size Papers, Regular and Official Envelopes, Carbon Papers, Etc. Handy on any desk. Size 7½x10x14½".

Beautiful Quartered Oak, Golden or Natural finish also Birch Mahogany.

\$2.50
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For Electros, Blanks, Forms, Copy and other papers. Six drawers—each 1½x8½x14½". All Solid Oak, Golden or Natural finish—corner-locked construction.

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FREE: Booklet "Filing Suggestions" sent with 96 page Catalog "L".

Weis Swinging Desk Stand

for Type-writer, Adding Machines, Reference Books, Etc. May be fastened to either side of any style desk. Solid Oak Top, 14x18 inches on strong black enamel Metal Stand. Swings out of the way when not in use. LOCKS where you want to use it. Handy on any desk.

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Ask Your Grocer for

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**Bakery at 110 North Corn Street
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Before leaving for your Easter Vacation
order her

Easter Flowers She Expects Them

Nothing would please her more
than a corsage of violets, or
sweet peas, or a choice box of
cut roses, daffodils, or tulips or
a beautiful blooming plant.

Flowers by Telegraph to any
part of the U. S. or Canada.

The Bool Floral Co.

Home Mixing vs. Manufactured Feeds

(Continued from 614)

attention to is whether he can afford to let his high priced hired man mix his feed or whether it will not pay him to buy his feed already mixed.

There can be no doubt that with their superior buying facilities as well as their efficient machinery for mixing feeds, the feed manufacturers can turn out their product at the same cost and often at less cost than the average farmer can mix it. By buying in large quantities, the feed manufacturer secures an extremely low price on his raw material. By means of his efficient machinery, he can mix the feed a great deal more thoroughly and rapidly than can the farmer with his shovel on the barn floor. The farmer can only buy in small quantities, but when labor is cheap he can probably mix his feed at slightly less than it costs at the feed store. But with hired men demanding almost impossible wages, and with the scarcity of farm labor, it will certainly pay the farmer to look into this matter and find out whether he is saving or losing money.

There was a time, no doubt, when mixed feeds were not what they should be and when the farmer, in self-defense, was driven to mixing his own feeds. But our agricultural experiment stations, with their accurate analyses, and the demand of the farmer himself has made it evident to the manufacturer that he must put only high quality materials in his feeds, and the feeds of today are a vast improvement over those of recent years.

Complete plans and specifications for dairy barn, hog house, garage, milk house, poultry house,—in fact for any farm structure,—may be had for the asking from the National Fire Proofing Company, 1136 Fulton Bldg., Pittsburg, Pa. This is a feature of the free service of this company which they offer to readers of this magazine.

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Springfield, Ohio

SPECIFICATIONS
Solid cast iron stove, 52 inch galvanized hover. Two double-disc thermostats, tandem hitched. Rocker furnace grates, self-cleaning and anti-clog. Check valve hung on knife edge bearings. Gas proof—fire proof—fool proof. Guaranteed to burn more than 24 hours in any temperature with one coaling. Capacity, up to 1000 chicks.

Agents Wanted Some good territory still open. An attractive proposition for the right man or firm.

\$16⁰⁰

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Ball Bearing; Long Wearing

"Silent Smith"

**wins the fight
against noise.**

[Producing power of both typist
and executive is increased by this
100 per cent efficient machine.]

In eliminating the clatter that up to this time has characterized typewriters, the L. C. Smith & Bros. Typewriter Company has taken the longest stride ahead since the introduction of "visible" writing.

Model 8—The "Silent Smith"

—runs so quietly and so smoothly that it is a relief to the nerve racked office worker.

There are many other new features worthy of consideration, including the decimal tabulator and the variable line spacer. Both are part of the regular equipment.

A left hand carriage return is furnished if desired, in place of the regular right hand lever.

An illustrated catalog of Model 8 may be had for the asking. Drop a card now to

L. C. Smith & Bros. Typewriter Company

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Branches in All Principal Cities

THE CORNER BOOKSTORES

CASE

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Case tractors today stand at the top of their field. Year after year they set a pace in quality performance that other manufacturers try in vain to equal.

Case tractors must be right. The very foundation of our continued success depends on *good* tractors.

The Case name has always stood for quality—and is accepted the world over as the standard by which others are judged. Each tractor we put on the market must *add* to the Case name.

Case tractors are made in the Case shops by Case workmen. They are simple, efficient, economical and noted for their constant responsive power. Under the severest test and in all

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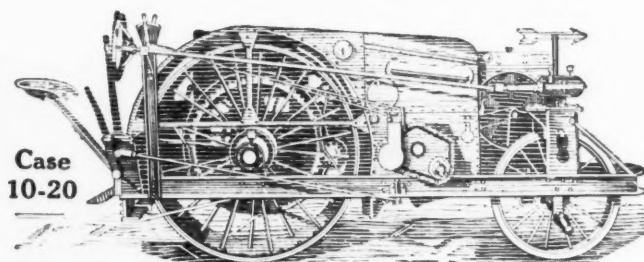
You should know Case tractors, also Case threshers, balers, silo fillers, Grand Detour engine gangs, steam engines, road rollers, rock crushers, stone bins and screens, road graders, scrapers, rooters, sprinklers, automobiles, etc.

In giving advice, or in equipping your farm, you should know the best.

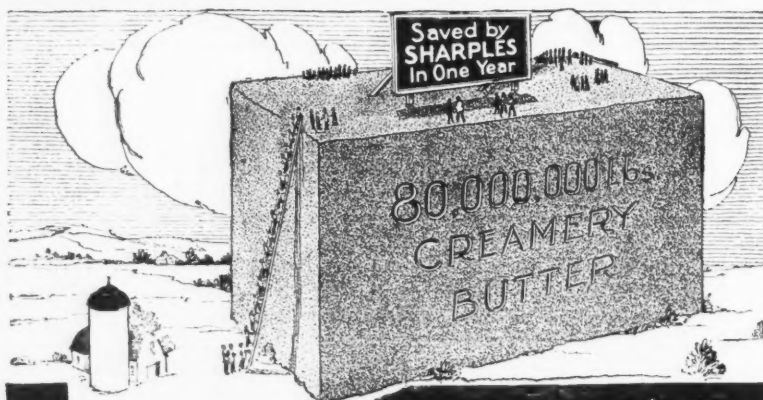
Write today for our free catalog.

J. I. CASE THRESHING MACHINE CO., Inc.

498 Erie St., Racine, Wis. Founded 1842



Case
10-20



The height of this print of 80,000,000 lbs. of butter is 90 feet—its length 180 feet. An average loss of 10 lbs. of butter per cow by all separators *except* Sharples causes this appalling yearly cream loss in the United States alone. If all separators were Sharples this immense pile would be *saved* annually. For this reason: Sharples is the *only* separator that skims clean regardless of speed. Look back over your past experience with separators. Many a day you determined to turn at top speed and not lose cream. But unconsciously, little by little, you slackened and *lost* cream. That separator was not a

SHARPLES

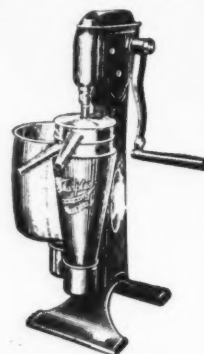
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If it were you could have slowed down and still gotten every particle of cream. Sharples is the only separator that "meets the moods"—almost human in its adaptability to every day conditions. It's the separator that not only *can* do unequalled work, but *will* do it, regardless of unfavorable circumstances. Sharples is

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- the *only* separator you can turn faster and finish skimming quicker.
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Over a million users! Made and strongly guaranteed by the oldest and greatest separator factory in America. Many a Sharples has been in constant use for 25 years at trifling repair cost. Send for free Catalog to Dept. 115.



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